

COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF AGRICULTURE.

BULLETIN NO. 107.

Analyses of  
**CONCENTRATED COMMERCIAL FEED STUFFS**

BY

Wm. Frear, Ph. D.

FROM

Samples Collected by the Department of Agriculture of  
Pennsylvania in 1902.



PUBLISHED BY DIRECTION OF THE SECRETARY.

1903.

WM. STANLEY RAY,  
STATE PRINTER OF PENNSYLVANIA.  
1903.



## TABLE OF CONTENTS.

---

	Page.
Preface by the Secretary, .....	5
Chemist's letter of transmittal, .....	7
Classification of samples, .....	9
Analyses of feed stuffs, 1902, .....	13
Analyses of cotton seed products, .....	14
Analyses of linseed meals, .....	16
Analyses of wheat products, .....	20
Analyses of rye products, .....	22
Analyses of barley products, .....	24
Analyses of rice products, .....	24
Analyses of oat products, .....	26
Analyses of corn products, .....	28
Analyses of mixed feeds from named grains, .....	32
Analyses of mixed feeds from materials not named in brand, .....	36
Analyses of animal meals, .....	47
Discussion of results, .....	48
Cotton seed meals and feeds, .....	48
Linseed meals, .....	48
Wheat products, .....	49
Barley products, .....	50
Oat feeds, .....	51
Corn products, .....	51
Mixed feeds, .....	52
Summary, .....	56



## PREFACE.

---

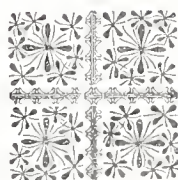
Harrisburg, Pa., Dec. 15, 1902.

The following Bulletin No. 167, giving the results of analyses of samples of Cattle Feeds collected by the Department of Agriculture in 1902, and analyzed by Dr. William Frear, Vice Director and Chemist of State College Agriculture Experiment Station, is the first to be published under the new Cattle Feed Control Law of 1901. Chemist of The State College Agriculture Experiment Station, is the this act, two hundred and sixty-three samples of cattle foods. The samples represented one hundred and fifty-two manufacturers and jobbers. Two hundred and thirty-seven of the brands were taken at one hundred and twenty-four places, and from two hundred different dealers.

The discussion of the results obtained by Dr. Frear, shows the law was much needed in Pennsylvania for the protection of our feed dealers and purchasers, against adulterated and worthless cattle feeds. These low grade feeds were offered in the markets at seemingly low prices, but in not a few cases, were neither true to name, or worth the price demanded.

The work of collecting the samples and analyzing them was very considerable. The farmers of the State, it is hoped, will be correspondingly benefited by the information obtained.

JOHN HAMILTON,  
Secretary of Agriculture.



LETTER OF TRANSMITTAL.

---

State College, Centre Co., Pa.,  
December 4, 1902.

Hon. John Hamilton, Secretary,  
Department of Agriculture, Harrisburg, Pa.:

Sir: I have the honor to submit herewith a report upon the examination of the cattle-food samples sent me in accordance with your direction during the year 1902.

Very respectfully,

WM. FREAR.



Digitized by the Internet Archive  
in 2015



## ANALYSIS OF CATTLE FOODS.

---

There have been received for examination during the year 1902, 263 samples of cattle-foods. With the exception of the first sample (No. 1), they were submitted by Mr. Enos B. Engle, the official sampling agent of the Department, under the Department seal.

These samples fall under the following classes, according to the brand names under which they were sold:

### Cotton-Seed Products:

Cotton-seed meal, .....	11	
Cotton-seed feed, .....	2	
	<hr/>	13

### Flaxseed Products:

Flax meal, .....	4	
Linseed meal, .....	25	
	<hr/>	29

### Wheat Products:

Bran, .....	1	
Middlings, .....	6	
Red dog flour, .....	1	
Wheat feed, .....	2	
Chop screenings, .....	1	
Germ middlings, .....	1	
	<hr/>	12

### Rye Products:

Rye chop, .....	3	
Rye feed, .....	1	
	<hr/>	4

### Barley Products:

Malt sprouts, .....	6	
Brewers' grains, .....	6	
	<hr/>	12

Oat feeds, .....	9
------------------	---

Rice feed, .....	1
------------------	---

### Corn Products:

Corn chop, .....	3
Corn-and-cob-meal, .....	1
Corn cob meal, .....	1
Gluten meals, .....	5

Gluten feeds, .....	10
Sugar feed, .....	1
Germ oil meal, .....	1
Cerealine feeds, .....	3
Hominy feeds, .....	3
Corn brans, .....	4
	<hr/> 32
Mixed Feeds of Named Components:	
Corn-and-oat chops and feeds, .....	24
Corn, oats and barley chops, .....	6
Rye and oats chops, .....	3
Chops and feeds whose components are not named:	
General, .....	86
Proprietary:	
Not condimental, .....	22
Condimental, .....	9
	<hr/> 31
Animal meal, .....	1
	<hr/>
Total, .....	263
	<hr/> <hr/>

The representative character of this collection of samples may be judged from the following details:

Number of manufacturers and jobbers represented, .....	152
Number of manufacturers and jobbers from other States, ....	44
Number of brands represented, .....	237
Number of places at which samples were selected, .....	124
Number of dealers from whom samples were taken, .....	200

The samples were received in glass containers, provided with a metallic screw-cap, and each container was enclosed in a sealed paper carton.

The feeds kept in good condition in these packages.

They were prepared for analysis by being fine ground; the prepared samples were preserved in sample jars with a pressure cap and rubber gasket.

Aside from a check determination of the moisture in the several feeds, they were submitted to chemical analysis only for the determination of their protein and fat—the constituents whose percentage the law requires shall be stated upon the package in which the food is sold. The methods employed are those prescribed by the Association of Official Agricultural Chemists. The details of the analytical operations were carried out, in the determination of protein, by M. S. McDowell, M. S., and T. M. Carpenter, B. S., in the

determination of moisture and fat, by M. H. Pingree, B. S., who also had charge of the preparation of the samples and the care of the records. All determinations were made in duplicate.

In addition to the chemical examination, the foods were submitted to a microscopical study, to determine, so far as practicable, the character of the ingredients. The appearance of the feed when carefully examined by the naked eye or by aid of a magnifying glass of low power, often leads to the identification of some portion of its constituents—such as bits of yellow corn, buckwheat hulls, oat hulls, bran, the red palets of corn, charcoal or iron oxid; the flavor of the feed quickly reveals the presence of salt, cayenne pepper or of a bitter condiment; while the odor of assafetida, fennel, fennugreek and the carob bean are sometimes sufficiently pronounced to lead to their detection. By the use of a microscope of magnifying power ranging from 50 to 300 diameters, the starch grains from the several principal feeding-stuffs may be identified; for while chemically of the same nature, starches from grain species of plants are usually characterized by their simple or composite nature, their shape, their size and their behavior toward polarized light. Thus, the grain of barley, wheat and rye are flattened disks, and are readily distinguished from the starch of oats, which is a large oval granule, subdivided into polygons, which break apart under pressure; corn, rice and buckwheat starches are small, angular grains, and are marked with distinct crosses when examined in water under polarized light; barley, wheat and rye do not show this characteristic under these conditions. These three starches are quite readily distinguished, when examined separately, because of differences in the size of the starch grains. Barley grains, though varying from 13 to 39 micro-millimeters in diameter (a micro-millimeter is one-millionth of a meter, or about 1-25,000 inch), has most of its granules measuring uniformly from 18 to 20 micro-millimeters; wheat has two sizes of starch grains, a small size of 2 to 5 micro-millimeters, and a large size usually ranging from 28 to 42 micro-millimeters, though rarely reaching 52; rye closely resembles wheat, but has a much larger proportion of large grains, ranging from 35 to 57 micro-millimeters. When these starches are mixed, the identification of their species is often very difficult, if not impossible. In the case of barley, the size of certain cells of the hull, and the wide, thin-walled hairs are often useful in identification; the bran and hairs of wheat and rye are distinguishable with care.

It is by the aid of the distinguished characters just mentioned, and by comparison with pulverized feeding-stuffs of known history and with a set of prepared sections representing the principal grains with their chaff and hull, that the microscopical determinations have been

made. The writer has performed this portion of the analytical work himself, but has been unable, because of the demands from other duties, to carry it to the degree of completeness he has desired; the conclusions stated are, however, the result of careful comparisons and measurements and, it is believed, are correct.

The results of the examination of the feeds received during the present year are tabulated in the following pages. For convenience of reference to the data concerning a feed of given name, the results have been arranged in the following tables:

- I. Cotton-seed products.
- II. Linseed meals.
- III. Wheat products.
- IV. Rye products.
- V. Barley products.
- VI. Rice products.
- VII. Oat products.
- VIII. Corn products.
- IX. Mixed feeds whose ingredients are named.
- X. Mixed feeds whose ingredients are not named.
  - [I]. Proprietary brands.
    - (a). Non-condimental.
    - (b). Condimental.
  - [II]. Brands not proprietary.
- XI. Animal meals.

The data belonging to a given table are arranged in alphabetical order by manufacturers.

Points of special interest respecting any group are discussed in pages following the tables.

Comments upon the forgoing results will be confined to the more salient points. Readers interested in studying more fully the feeding value and composition of the several grains and the processes by which their several by-products are prepared, are referred to Bulletin 81 of this Department.

---

ANALYSES  
OF  
FEED STUFFS.  
1902.

---

TABLE I.—COTTON SEED PRODUCTS.

Sample number.	Manufacturer.†	Brand Name.	Place of Selection.	Name of Dealer.
<b>I. COTTON-SEED MEAL.</b>				
22	American Cotton Oil Co., New York City, .....	Prime Cotton-seed Meal, .....	Quincy, .....	D. M. Wertz.
57	American Cotton Oil Co., Jackson, Tenn., .....	Prime Cotton-seed Meal, .....	West Point, .....	Moyer & Matern.
25	Brooker & Gentry, Memphis, Tenn., .....	Star Brand, .....	Gettysburg, .....	J. G. Wolf's Sons.
27	F. W. Brode & Co., Memphis, Tenn., .....	Cotton-seed Meal, .....	Chester, .....	F. Frank McCall.
99	*W. I. Carroll, 1006 Pa. Ave., Pittsburg, Pa., .....	Prime Cotton-seed Meal, .....	New Brighton, .....	R. D. Hunter & Co.
135	*W. I. Carroll, 1006 Pa. Ave., Pittsburg, Pa., .....	Prime Cotton-seed Meal, .....	Kittanning, .....	Kittanning Milling Co.
1	Chapin & Co., St. Louis, Mo., .....	Green Diamond Prime Cotton-seed Meal, .....	Carlisle, .....	Paxton Flour & Feed Co.
2	Chapin & Co., St. Louis, Mo., .....	Green Diamond Brand, .....	Carlisle, .....	Deweese & Bracken.
58	Cotton Oil and Fiber Co., Norfolk, Va., .....	Cofco, .....	Paoli, .....	Brandt & Stehman.
26	Hunter Bros., St. Louis, Mo., .....	Cotton-seed Meal, .....	Mount Joy, .....	M. W. McCandless.
102	Kensington Milling Co., Kensington, Pa., .....	Cotton-seed Meal, .....	Beaver Falls, .....	
<b>II. COTTON-SEED FEED.</b>				
35	J. D. Rauch, Kinzers, Pa., .....	Cotton-seed Feed, .....	Chester, .....	Wm. M. Powell.
45	Southern Cotton Oil Co., Charlotte, N. C., .....	Cotton-seed Feed, .....	Morton, .....	J. F. Beatty.

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by \*.

TABLE I—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
I. COTTON-SEED MEAL.						
22	American Cotton Oil Co., New York City, .....	43	43.81	9	9.86	Color bright; odor, sweet.
57	American Cotton Oil Co., Jackson, Tenn., .....	43	46.25	9	8.07	
25	Booker & Gentry, Memphis, Tenn., .....	43	42.75	9-10	9.52	"Off color" for a prime grade.
27	F. W. Brode & Co., .....	43	46.88	9	7.49	
99	*W. I. Carroll, 1066 Pa. Ave., Pittsburg, Pa., .....	.....	40.00	.....	13.02	Color dark.
135	*W. I. Carroll, 1066 Pa. Ave., Pittsburg, Pa., .....	.....	43.19	.....	7.44	Color dark.
1	Chapin & Co., St. Louis, Mo., .....	43	39.50	9	10.14	
2	Chapin & Co., St. Louis, Mo., .....	43	44.81	9	7.54	
58	Cotton Oil and Fiber Co., Norfolk, Va., .....	43	44.81	9-10	10.55	
26	Hunter Bros., St. Louis, Mo., .....	43	46.19	9	9.47	
102	Kensington Milling Co., Kensington, Pa., .....	.....	40.50	.....	10.86	Color medium.
II. COTTON-SEED FEED.						
35	J. D. Rauch, Kinzers, Pa., .....	12.43	24.06	6.17	3.33	Crude fiber, 35.12 per cent.
45	Southern Cotton Oil Co., Charlotte, N. C., .....	12.43	14.31	6.17	4.11	Crude fiber, 31.18 per cent.

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by\*.



TABLE II.—LINSEED MEALS.

Sample number.	Manufacturer.†	Brand Name.	Place of Selection.	Name of Dealer.
201	American Linseed Co., Chicago, Ill., .....	Cleveland Flax Meal, .....	Verkes, .....	Landis Bros.
7	American Linseed Co., Chicago, Ill., .....	Linseed Oil Meal, .....	Myerstown, .....	E. L. Bleistein.
167	American Linseed Co., Chicago, Ill., .....	Old Process Oil Meal, .....	Warren, .....	Warren Mills Co.
176	American Linseed Co., New York, .....	Old Process Oil Meal, .....	Ridgway, .....	Smith Bros. Co., Ltd.
74	Armstrong, McKelvey Co., Allegheny, Pa., .....	Oil Cake Meal, .....	Lewistown, .....	Elder & Eckbert.
60	*Levi Branch, Harrisburg, Pa., .....	Pure Old Process Oil Meal, .....	Middletown, .....	J. B. Deckard.
43	*Chapin & Co., The Bourse, Philadelphia, Pa., .....	Old Process Oil Meal, .....	West Chester, .....	E. D. Hemphill.
13	Cleveland Linseed and Oil Co., Cleveland, O., .....	Cleveland Flax Meal, .....	Hellam, .....	J. W. Mitzel.
24	Cleveland Linseed and Oil Co., Cleveland, O., .....	Oil Meal, .....	Hanover, .....	Wm. J. Young & Co.
136	*Thos. Flynn, Emlenton, Pa., .....	Cleveland Flax Meal, .....	Emlenton, .....	Emlenton Milling Co.
19	Grove Linseed Oil Co., Philadelphia, .....	Oil Meal, .....	Shippensburg, .....	M. G. Hale.
161	Hanenstein & Co., Buffalo, N. Y., .....	Old Process Linseed Meal, .....	North East, .....	Blaine & Mackey.
133	*T. C. Jenkins, Pittsburg, Pa., .....	Oil Cake Meal, .....	West Kensington, .....	J. A. Hawk.
20	Spencer Kellor, Buffalo, N. Y., .....	Old Process Oil Meal, .....	Shippensburg, .....	J. W. McPherson & Son.
160	Spencer Kellor, Buffalo, N. Y., .....	Old Process Oil Meal, .....	North East, .....	John W. Scouller.
71	John G. Lewis & Bros. Co., Philadelphia, .....	Linseed Cake Meal, .....	Carlisle, .....	M. N. Wagner.
200	S. H. Longaker & Co., Schwenksville, Pa., .....	Cake Meal, .....	Phoenixville, .....	W. H. Lenhen.
142	*Chas. J. McCullough, Cincinnati, O., .....	Linseed Meal, .....	Oil City, .....	Oil City Milling Co.
54	Mellvaine Bros., Philadelphia, .....	Flax Seed Meal, .....	Philadelphia, .....	Frank Richards.
4	Mann Bros. Co., Buffalo, N. Y., .....	Old Process Oil Meal, .....	Lebanon, .....	A. M. Weltner & Sons.
72	Mann Bros. Co., Buffalo, N. Y., .....	Old Process Oil Meal, .....	Gettysburg, .....	J. G. Wolf's Sons.
73	Mann Bros. Co., Buffalo, N. Y., .....	Old Process Oil Meal, .....	Altoona, .....	D. A. Ferguson.
96	The Mansfield Linseed Oil Co., Mansfield, O., .....	Pure Old Process Ground Linseed Cake, ..	Rochester, .....	H. J. Speyerer.

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by \*.



TABLE II—Continued.

Sample number.	Manufacturer.†	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
201	American Linseed Co., Chicago, Ill., .....	37.5	39.00	1.	2.00	Has been extracted.
7	American Linseed Co., Chicago, Ill., .....	38.	39.31	1.	1.99	
167	American Linseed Co., Chicago, Ill., .....	32.36	31.44	5.7	6.10	
176	American Linseed Co., New York, .....	36.	35.00	6.	6.63	
74	Armstrong, McKelvey Co., Allegheny, .....	.....	36.81	.....	5.89	
60	*Levi Branch, Harrisburg, Pa., .....	.....	31.38	.....	6.49	
43	*Chapin & Co., The Bourse, Philadelphia, Pa., .....	.....	37.81	.....	9.39	
13	Cleveland Linseed and Oil Co., Cleveland, O., .....	38.	37.00	.....	1.31	
24	Cleveland Linseed and Oil Co., Cleveland, O., .....	38.	37.94	1.	1.56	
136	*Thos. Flynn, Emlenton, Pa., .....	.....	34.19	.....	8.02	
19	Grove Linseed Oil Co., Philadelphia, .....	.....	36.50	.....	8.06	
161	Hanenstein & Co., Buffalo, N. Y., .....	37.82	35.31	7.54	6.24	
133	*T. C. Jenkins, Pittsburg, Pa., .....	32.	32.38	5.5	8.67	
20	Spencer Kellog, Buffalo, N. Y., .....	.....	36.13	.....	5.26	
160	Spencer Kellog, Buffalo, N. Y., .....	35.94	33.38	5.04	9.77	
71	John G. Lewis & Bros. Co., Philadelphia, .....	32.	35.06	5.2	8.57	
200	S. H. Longaker & Co., Schuicksville, Pa., .....	.....	34.63	.....	8.74	
142	*Chas. J. McCullough, Cincinnati, O., .....	.....	29.44	.....	8.50	
54	McIlvaine Bros., Philadelphia, .....	.....	32.44	.....	28.13	
4	Mann Bros. Co., Buffalo, N. Y., .....	34.15	34.56	9.05	8.15	
72	Mann Bros. Co., Buffalo, N. Y., .....	31.15	35.00	6.05	7.19	
75	Mann Bros. Co., Buffalo, N. Y., .....	34.15	36.31	6.05	7.18	
96	The Mansfield Linseed Oil Co., Mansfield, O., .....	.....	28.69	.....	7.92	

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by \*.

TABLE II --Continued.

Sample number.	Manufacturer.†	Brand Name.	Place of Selection.	Name of Dealer.
126	The Mansfield Linseed Oil Co., Mansfield, O., .....	Pure Old Process Linseed Meal, .....	Butler, .....	Geo. Walter & Sons.
171	Metzger Seed and Oil Co., Toledo, O., .....	Old Process Oil Meal, .....	Bradford, .....	B. H. Green.
46	Midland Linseed Oil Co., Minneapolis, Minn., .....	Oil Meal, .....	Lansdale, .....	A. C. Godschalk & Co.
113	Midland Linseed Oil Co., Minneapolis, Minn., .....	Old Process Ground Linseed Cake, .....	Greensborough, .....	Wm. Schonaker & Co.
240	John D. S. Potts, Philadelphia, .....	Cake Meal, .....	Pottsville, .....	Stein & Co., Ltd.
73	Thompson & Co., Allegheny, Pa., .....	Old Process Oil Meal, .....	Lewistown, .....	Spanogle & Yeager.

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by \*.

TABLE II—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
126	The Mansfield Linseed Oil Co., Mansfield, O.,	.....	23.94	.....	7.01	
171	Metzger Seed and Oil Co., Toledo, O.,	32.36	29.88	5.7	6.46	
46	Midland Linseed Oil Co., Minneapolis, Minn.,	.....	34.44	.....	9.65	
113	Midland Linseed Oil Co., Minneapolis, Minn.,	32.	28.06	5.5	7.97	
240	John D. S. Potts, Philadelphia,	.....	33.88	.....	9.43	
73	Thompson & Co., Allegheny, Pa.,	.....	33.00	.....	8.27	

†In cases where it is distinctly indicated that the shippers are jobbers, not manufacturers, the firm name is marked by\*.

TABLE III.—WHEAT PRODUCTS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
164	National Milling Co., Toledo, O., .....	Bran, .....	Union City, .....	Camp Milling Co.
	BRAN.			
134	American Cereal Co., Chicago, Ill., .....	White Middlings, .....	Kittanning, .....	E. Nelson.
79	T. M. Biddle, Altoona, Pa., .....	Gem Middlings, .....	Altoona, .....	T. M. Biddle.
109	L. Christian & Co., Minneapolis, Minn., .....	Red Dog Flour, .....	Beaver Falls, .....	Dodds & Garrett.
212	*R. B. Delp, Allentown, Pa., .....	Middlings, .....	Quakertown, .....	T. & J. Stracon.
262	G. E. Gee Grain Co., Minneapolis, Minn., .....	Extra Fancy Sharps, .....	Halfax, .....	A. M. Pike.
248	Gregory, Jennison & Co., Minneapolis, Minn., .....	Standard Middlings, .....	Milton, .....	G. F. Brann & Son.
163	Toledo Grain and Milling Co., Toledo, O., .....	No. 1 White Middlings, .....	Union City, .....	Camp Milling Co.
	WHEAT FEED.			
94	American Cereal Co., Akron, O., .....	Buckeye Wheat Feed, .....	Rochester, .....	H. J. Speyver.
85	American Cereal Co., Chicago, Ill., .....	Buckeye Wheat Feed, .....	Leetsdale, .....	Chas. Groetzinger.
	MISCELLANEOUS PRODUCTS.			
105	Duncannon Flouring Mill Co., Duncannon, Pa., .....	Chop Screenings, .....	Duncannon, .....	Duncannon Flouring Mills Co.
261	G. E. Gee Grain Co., Minneapolis, Minn., .....	Gee's Germ Middlings, .....	Halfax, .....	A. M. Pike.

\*Jobber, not manufacturer.

TABLE III—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Fat.		Protein.		
		Guaranteed.	Found.	Guaranteed.	Found.	
164	BRAN. National Milling Co., Toledo, O., .....	.....	16.38	.....	4.50	
134	MIDDLLINGS. American Cereal Co., Chicago, Ill., .....	.....	21.19	.....	6.08	Brown; some dust room stuff.
79	T. M. Biddle, Altoona, Pa., .....	.....	19.38	2.1	4.21	Brown.
100	L. Christian & Co., Minneapolis, Minn., .....	10.1	18.56	.....	4.03	
212	*R. B. Delp, Allentown, Pa., .....	.....	7.88	.....	1.37	Adulterated with cob meal.
262	G. E. Gee Grain Co., Minneapolis, Minn., .....	13.25	12.56	2.07	1.55	Granular; many weed seeds, chiefly crushed.
248	Gregory Jennison & Co., Minneapolis, Minn., .....	.....	15.69	.....	5.33	Brown.
163	Toledo Grain and Milling Co., Toledo, O., .....	.....	14.31	.....	4.99	
94	WHEAT FEED. American Cereal Co., Akron, O., .....	.....	17.31	.....	4.22	
85	American Cereal Co., Chicago, Ill., .....	17.75	16.88	4.70	4.44	
105	MISCELLANEOUS PRODUCTS. Duncannon Flouring Mill Co., Duncannon, Pa., .....	.....	13.69	.....	2.73	Composed almost entirely of weed seeds with wheat germ intermixed. Most of the weeds were the wild buck-
261	G. E. Gee Grain Co., Minneapolis, Minn., .....	14.38	15.00	6.64	7.83	wheat, but there were a number of smaller species that entirely escaped crushing.

\*Jobber, not manufacturer.

TABLE IV.--RYE PRODUCTS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
245	Bogar & Bergamer, Herndon, Pa., .....	Pure Rye Chop, .....	Shamokin, .....	Theodore Heck.
263	Chas. T. Mattes, Elizabethville, Pa., .....	Rye Chop, .....	Lykens, .....	R. Coble & Sons.
241	Mauser Mill Co., Treichlers, Pa., .....	Rye Chop, .....	Tamaqua, .....	C. W. Royer.
220	Milton Flory, Bangor, Pa., .....	Rye Feed, .....	Bangor, .....	Milton Flory.

\*Jobber, not manufacturer.

TABLE IV—Continued.

Sample number.	Manufacturer.†	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
245	Bogar & Bergamer, Herndon, Pa., .....	.....	10.63	.....	1.92	
253	Chas. T. Mattes, Elizabethtville, Pa., .....	.....	11.13	.....	2.03	
241	Mauser Mill Co., Treichlens, Pa., .....	.....	12.25	.....	3.13	
236	Milton Flory, Bangor, Pa., .....	.....	10.63	.....	3.89	

†Jobber, not manufacturer.

TABLE V.—BARLEY PRODUCTS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
MALT SPROUTS.				
53	Louis Bergdoll Brewing Co., Philadelphia, Pa.,	Malt Sprouts,	Philadelphia,	Louis Bergdoll Brewing Co.
203	*J. M. Buckley & Co., Philadelphia, Pa.,	Malt Sprouts,	Norristown,	Simpson Bros.
211	P. C. Kamm, Milwaukee, Wis.,	Malt Sprouts,	Doylestown,	Henry S. Beidler.
34	E. F. Mueller, Milwaukee, Wis.,	Malt Sprouts,	Chester Heights,	R. C. Fairlamb & Co.
49	Penn Grains and Feed Co., Philadelphia, Pa.,	Malt Sprouts,	Philadelphia,	Penn Grain & Feed Co.
83	*M. G. Rankin & Co., Milwaukee, Wis.,	Malt Sprouts,	McKeesport,	Brooms & Rule.
DRIED BREWERS' GRAINS.				
42	*Chapin & Co., Philadelphia, Pa.,	Dried Brewers' Grains,	West Chester,	E. D. Hemphill.
33	*B. Dewitt, Philadelphia, Pa.,	Brewers' Grains,	Chester Heights Camp Ground P. O.	R. C. Fairlamb & Co.
51	J. C. Klander Estate, Philadelphia, Pa.,	Brewers' Grains,	Philadelphia,	J. C. Klander Estate.
59	Alfred Meures Co., Milwaukee, Wis.,	Vacuum Dried Grains,	Paoli,	Deweese & Bracken.
50	Penn Grains and Feed Co., Philadelphia, Pa.,	Brewers' Grains,	Philadelphia,	Penn Grain & Feed Co.
70	*M. G. Rankin & Co., Milwaukee, Wis.,	Vacuum Dried Grains,	Mechanicsburg,	A. B. Harmish.

TABLE VI.—RICE PRODUCTS.

209	Manufacturer unknown,	Rice Feed,	Doylestown,	Henry Beidler.
-----	-----------------------	------------	-------------	----------------

\*Jobber, not manufacturer.



TABLE V—Continued.

Sample number.	Manufacturers.†	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Pound.	Guaranteed.	Pound.	
MALT SPROUTS.						
53	Louis Bergdoll Brewing Co., Philadelphia, Pa.,	.....	27.31	.....	1.85	Considerable barley hull and wild buckwheat. Contains some hulls. Rather large amounts of hulls, whole grain and weed-seeds.
203	*J. M. Buckley & Co., Philadelphia, Pa.,	.....	22.94	.....	1.32	
211	P. C. Kamm, Milwaukee, Wis.,	.....	23.81	.....	2.11	
34	E. P. Mueller, Milwaukee, Wis.,	.....	25.94	.....	1.64	
49	Penn Grains and Feed Co., Philadelphia, Pa.,	.....	19.31	.....	2.23	
83	*M. G. Rankin & Co., Milwaukee, Wis.,	24.8	25.50	1.7	1.33	
DRIED BREWERS' GRAINS.						
42	*Chapin & Co., Philadelphia, Pa.,	.....	23.81	.....	5.97	Contains raw barley. Contains raw corn and barley.
33	*B. Dewitt, Philadelphia, Pa.,	.....	23.81	.....	6.18	
51	J. C. Klander Estate, Philadelphia, Pa.,	23.24	25.25	7.64	6.74	
59	Alfred Meures & Co., Milwaukee, Wis.,	.....	23.75	.....	5.17	
50	Penn Grains and Feed Co., Philade lphia, Pa.,	.....	25.50	.....	5.47	
70	*M. G. Rankin & Co., Milwaukee, Wis.,	.....	22.44	.....	5.42	

TABLE VI—Continued.

209	Manufacturer unknown, .....	10.13	.....	7.44	Rice hulls and potash.
-----	-----------------------------	-------	-------	------	------------------------

\*Jobber, not manufacturer.

TABLE VII.—OAT PRODUCTS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
OAT FEEDS.				
15	Akron Cereal Co., Akron, O., .....	Royal Oat Feed, .....	Chambersburg, .....	John L. Reside.
62	Akron Cereal Co., Akron, O., .....	Royal Oat Feed, .....	Harrisburg, .....	M. Herman & Son.
23	American Cereal Co., Akron, O., .....	Vim Oat Feed, .....	Quincy, .....	D. M. Wertz.
38	American Cereal Co., Chicago, Ill., .....	Vim Oat Feed, .....	Penryn, .....	L. Y. Davis.
12	Chapin & Co., Philadelphia, Pa., .....	(O. F.) Choice Oat Feed, .....	Columbia, .....	Geo. J. Kauphore.
210	*F. K. Fish & Sons, New York City, .....	Oat Feed, .....	Doylestown, .....	Henry S. Beidler.
90	The Great Western Cereal Co., Chicago, Ill., .....	Cream Oat Feed, .....	Bedford, .....	H. H. Lysinger.
186	Jos. H. Kreider & Son, Annville, Pa., .....	Western Oat Feed, .....	Annville, .....	Jos. H. Kreider.
244	*John Yeager & Co., Wilkes-Barre, Pa., .....	Oat Feed, .....	Mt. Carmel, .....	E. G. Goudart.

\*Jobber, not manufacturer.

TABLE VII --Continued.

Sample number.	Manufacturer.†	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
		OAT FEEDS.				
15	Akron Cereal Co., Akron, O., .....	8.25	6.25	4.14	2.32	
62	Akron Cereal Co., Akron, O., .....	8.23	7.13	4.14	2.66	
23	American Cereal Co., Akron, O., .....	.....	8.00	.....	2.30	
38	American Cereal Co., Chicago, Ill., .....	.....	5.56	.....	1.90	
12	Chapin & Co., Philadelphia, Pa., .....	.....	6.06	.....	2.01	
210	*F. K. Fish & Sons, New York City, .....	.....	1.50	.....	.76	Oat hulls.
90	The Great Western Cereal Co., Chicago, Ill., .....	6.97	6.88	2.83	2.18	
186	*Jos. H. Kreider & Son, Annville, Pa., .....	.....	5.69	.....	2.45	Oat hulls, corn and middlings.
244	John Yeager & Co., Wilkes-Barre, Pa., .....	.....	2.81	.....	1.10	Oat hulls.

†Jobber, not manufacturer.

TABLE VIII.—CORN PRODUCTS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
<b>SIMPLE MILLING PRODUCTS.</b>				
77	T. M. Biddle, Altoona, Pa., .....	Gilt Edge Corn Chop, .....	Altoona, .....	T. M. Biddle.
207	Corona Milling Co., Greentown, Ind., .....	Cob Meal, .....	Norristown, .....	J. M. Merwine.
243	Diamond Mills, Buffalo, N. Y., .....	Corn Meal, .....	Ashland, .....	Harmony Cereal Co.
89	The Harmony Cereal Co., .....	Corn Chop Feed, .....	Harmony, .....	J. H. Kreitzer.
251	J. H. Ross, Linden Hall, Pa., .....	Chop, .....	Milton, .....	
<b>HOMINY FEEDS.</b>				
40	*Chapin & Co., Philadelphia, Pa., .....	Hominy Feed, .....	West Chester, .....	E. D. Hemphill.
65	*Chapin & Co., Philadelphia, Pa., .....	Green Diamond Hominy Feed, .....	Palmyra, .....	J. S. Bomberger & Sons.
52	J. C. Klander Estate, Philadelphia, Pa., .....	Hominy Feed, .....	Philadelphia, .....	J. C. Klander Estate.
<b>GLUTEN MEALS.</b>				
120	The Glucose Sugar Refining Co., Chicago, Ill., .....	Chicago Gluten Meal, .....	New Castle, .....	Marshall Bros.
150	The Glucose Sugar Refining Co., Chicago, Ill., .....	Chicago Gluten Meal, .....	Erie, .....	Wm. J. Carroll.
29	National Starch Co., Indianapolis, Ind., .....	King Gluten Meal, .....	Chester, .....	T. Frank McCall.
124	National Starch Co., Buffalo, N. Y., .....	King Gluten Meal, .....	Grove City, .....	M. I. Montgomery.
146	Chas. Pope Glucose Co., Chicago, Ill., .....	Cream Gluten Meal, .....	Erie, .....	A. O. Jones.
<b>GLUTEN FEEDS.</b>				
14	Chapin & Co., Philadelphia, Pa., .....	Gluten Feed, .....	Harrisburg, .....	Paxton Flour & Feed Co.
66	Chapin & Co., Philadelphia, Pa., .....	Best Yellow Gluten, .....	Palmyra, .....	J. S. Bomberger & Sons.
132	Glucose Refining Co., Pekin, Ill., .....	Crescent Gluten Feed, .....	Harmony, .....	Harmony Milling Co.
37	The Glucose Sugar Refining Co., Chicago, Ill., .....	Gluten Feed, .....	Ambler, .....	J. Watson Craft.

TABLE VIII—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
SIMPLE MILLING PRODUCTS.						
77	T. M. Biddle, Altoona, Pa., .....	8.5	11.00	3.0	3.77	Contains cob and middlings. Granulated cob.
207	Corona Milling Co., Greentown, Ind., .....	.....	2.00	.....	.30	
233	Diamond Mills, Buffalo, N. Y., .....	.....	8.69	.....	3.32	Contains many palets. Corn-and-cob meal.
89	The Harmony Cereal Co., .....	.....	8.44	.....	2.84	
251	J. H. Ross, Linden Hall, Pa., .....	.....	7.00	.....	3.57	
HOMINY FEEDS.						
40	*Chapin & Co., Philadelphia, Pa., .....	.....	11.31	.....	8.20	Contains cob and middlings. Granulated cob.
65	*Chapin & Co., Philadelphia, Pa., .....	.....	10.88	.....	7.78	
52	J. C. Klander Estate, .....	.....	9.63	.....	6.14	
GLUTEN MEALS.						
120	The Glucose Sugar Refining Co., Chicago, Ill., .....	39.	35.50	2.	2.55	Considerable corn starch present.
150	The Glucose Sugar Refining Co., Chicago, Ill., .....	39.	39.00	2.	2.74	
29	National Starch Co., Indianapolis, Ind., .....	36.	35.63	4.3	1.51	
124	National Starch Co., Buffalo, N. Y., .....	37.	31.94	3.6	2.46	
146	Chas. Pope Glucose Co., Chicago, Ill., .....	34.12	43.63	3.20	.83	
GLUTEN FEEDS.						
14	Chapin & Co., Philadelphia, Pa., .....	28.	24.50	.....	3.64	Considerable corn starch present.
66	Chapin & Co., Philadelphia, Pa., .....	.....	25.56	.....	4.08	
132	Glucose Refining Co., Pekin, Ill., .....	27.5	26.00	3.3	2.70	
37	The Glucose Sugar Refining Co., Chicago, Ill., .....	28.5	27.13	2.5	2.12	

TABLE VIII—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
82	The Glucose Sugar Refining Co., Chicago, Ill., .....	Gluten Feed, .....	McKeesport, .....	Broms & Rule.
114	The Glucose Sugar Refining Co., Chicago, Ill., .....	Buffalo Gluten Feed, .....	Rochester, .....	O. Korsmann.
158	Illinois Sugar Refining Co., Chicago, Ill., .....	Pekin Gluten Feed, .....	Jamestown, .....	Webb & Vanderslice.
28	National Starch Co., Indianapolis, Ind., .....	Queen Gluten Feed, .....	Chester, .....	T. Frank McCall.
145	New York Glucose Co., New York City, .....	Globe Gluten Feed, .....	Erle, .....	A. O. Jones.
97	United States Sugar Refining Co., Chicago, Ill., .....	Waukegan Gluten Feed, .....	Freedom, .....	Lemerink & Mengel.
CEREALINE FEEDS.				
41	*M. F. Baringer, Philadelphia, Pa., .....	Cerealine, .....	West Chester, .....	E. D. Hemphill.
55	The Cerealine Manufacturing Co., Indianapolis, Ind., .....	Cerealine No. 2, .....	West Point, .....	Wm. K. Heebner.
39	*Wm. K. Heebner, West Point, Pa., .....	Cerealine, .....	North Wales, .....	J. H. Leister & Son.
CORN BRAN.				
245	*M. F. Baringer, Philadelphia, Pa., .....	Star Corn Bran, .....	Norristown, .....	W. R. Vanskite.
198	The Glucose Sugar Refining Co., Chicago, Ill., .....	Coarse Corn Bran, .....	Pottstown, .....	Horace Reigner.
47	*J. S. Stone, Philadelphia, Pa., .....	Sugar Corn Bran, .....	Lansdale, .....	A. C. Godshall & Co.
OTHER MANUFACTURING BY-PRODUCTS.				
127	The Glucose Sugar Refining Co., Chicago, Ill., .....	Germ Oil Meal, .....	Butler, .....	Geo. Walter & Sons.
56	The Glucose Sugar Refining Co., Chicago, Ill., .....	Sugar Feed, .....	West Point, .....	Wm. K. Heebner.
32	The Hudnut Co., Terre Haute, Ind., .....	Maiziline, .....	Chester Heights, .....	R. C. Fairlamb & Co.

\*Jobber, not manufacturer.

TABLE VIII--Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
82	The Glucose Sugar Refining Co., Chicago, Ill.,	.....	27.63	.....	2.71	
114	The Glucose Sugar Refining Co., Chicago, Ill.,	28.	25.88	3.	2.68	
158	Illinois Sugar Refining Co., Chicago, Ill.,	27.7	25.81	3.5	3.27	
28	National Starch Co., Indianapolis, Ind.,	27.1	22.44	2.9	2.59	
145	New York Glucose Co., New York City,	27.5	25.19	3.38	2.62	
97	United States Sugar Refining Co., Chicago, Ill.,	27.38	24.13	3.39	3.23	
CEREALINE FEEDS.						
41	*M. F. Barlinger, Philadelphia, Pa.,	.....	9.06	.....	5.98	
55	The Cerealine Mfg. Co., Indianapolis, Ind.,	10.82	12.69	8.03	10.65	
39	*Wm. K. Heebner, West Point, Pa.,	.....	8.69	.....	7.59	
CORN BRAN.						
205	*M. F. Barlinger, Philadelphia, Pa.,	.....	10.56	.....	8.77	Considerable germ and starchy matter.
198	The Glucose Sugar Refining Co., Chicago, Ill.,	.....	12.44	.....	3.08	
47	*J. S. Stone, Philadelphia, Pa.,	.....	10.00	.....	3.88	
OTHER MANUFACTURING BY-PRODUCTS.						
127	The Glucose Sugar Refining Co., Chicago, Ill.,	25.5	20.31	10.5	8.17	Some corn bran.
56	The Glucose Sugar Refining Co., Chicago, Ill.,	.....	12.75	.....	4.19	
33	The Hudnut Co., Terre Haute, Ind.,	12.55	9.38	8.52	7.41	Resembles "hominy feed."

\*Jobber, not manufacturer.

TABLE IX.—MIXED FEEDS FROM NAMED GRAINS.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
CORN AND OATS.				
8	American Cereal Co., Akron, O., .....	Victor Corn and Oats Feed, .....	Meyerstown, .....	C. R. Yost.
81	American Cereal Co., Akron, O., .....	Victor Corn and Oats Feed, .....	Sharpsburg, .....	Keil & Seavey.
111	American Cereal Co., Chicago, Ill., .....	"C." or Corn and Oat Feed, .....	Johnstown, .....	John Irvin.
78	T. M. Biddle, Altoona, Pa., .....	Star Corn and Oat Chop, .....	Altoona, .....	T. M. Biddle.
249	G. F. Braun & Son, Milton, Pa., .....	Corn and Oat Chop, .....	Milton, .....	G. F. Braun & Son.
255	The Diamond Mills Co., Buffalo, N. Y., .....	Corn and Oat Feed, .....	Williamsport, .....	Acme Coal Co.
44	Ellsworth & Co., Buffalo, N. Y., .....	De Fl Corn and Oats Feed, .....	Morton, .....	J. F. Beatty.
138	Emlenton Milling Co., Ltd., Emlenton, Pa., .....	Corn and Oat Chop, .....	Emlenton, .....	Barnant & Grant.
141	Enterprise Milling Co., Oil City, Pa., .....	No. 1 Corn and Oat Chop, .....	Oil City, .....	Enterprise Milling Co.
177	M. B. Goff, DuBois, Pa., .....	Corn and Oat Chop, .....	DuBois, .....	M. B. Goff.
197	J. W. Goheen, Birdsboro, Pa., .....	Corn and Oat Feed, .....	Birdsboro, .....	J. W. Goheen.
256	A. Good, Newberry, Pa., .....	Corn and Oat Chop, .....	Williamsport, .....	Gohl & King.
67	The Great Western Cereal Co., Akron, O., .....	Boss Corn and Oats Feed, .....	Palmyra, .....	A. S. Stauffer.
137	The Great Western Cereal Co., Akron, O., .....	Boss Corn and Oats Feed, .....	Emlenton, .....	Emlenton Milling Co.
69	The Great Western Cereal Co., Chicago, Ill., .....	Boss Corn and Oats Feed, .....	Mechanicsburg, .....	A. B. Harmish.
91	The Great Western Cereal Co., Chicago, Ill., .....	Durham Corn and Oat Feed, .....	Bedford, .....	H. H. Lysinger.
242	Hopper Bros., Mahanoy City, Pa., .....	Corn and Oat Chop, .....	Mahanoy, .....	Hopper Bros.
101	Kensington Milling Co., Kensington, Pa., .....	C. & O. Chop, .....	Beaver Falls, .....	M. M. McCandless.
151	F. A. McKenzie, Quincy, Mich., .....	Corn and Oat Chop, .....	Erie, .....	A. Dietz.
169	Smith Bros., Bradford, Pa., .....	Corn and Oat Feed, .....	Bradford, .....	Smith Bros.
125	Sproull Bros., Boyer, Pa., .....	Corn and Oat Chop, .....	Armandale, .....	Sproull Bros.
153	Tucker & Squires, Springboro, Pa., .....	Corn and Oat Chop, .....	Springboro, .....	Tucker & Squier.
194	Henry S. Weinberger, Oley, Pa., .....	Corn and Oat Chop, .....	Reading, .....	S. R. Blankenhill.



TABLE IX—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
		CORN AND OATS.				
8	American Cereal Co., Akron, O.,	8.23	9.56	3.	4.29	
81	American Cereal Co., Akron, O.,	8.75	9.00	3.75	4.58	
111	American Cereal Co., Chicago, Ill.,	.....	9.50	.....	3.50	
78	T. M. Biddle, Altoona, Pa.,	8.5	10.94	3.	6.06	Wheat middlings present.
249	G. F. Braun & Son, Milton, Pa.,	.....	9.44	.....	4.45	
255	The Diamond Mills Co., Buffalo, N. Y.,	.....	9.44	.....	4.13	
44	Ellsworth & Co., Buffalo, N. Y.,	8.3	8.63	3.	3.00	Middlings present.
138	Emlenton Milling Co., Ltd., Emlenton, Pa.,	.....	10.06	.....	4.21	Middlings present.
141	Enterprise Milling Co., Oil City, Pa.,	.....	9.06	.....	3.26	Middlings present.
177	M. B. Goff, Dubois, Pa.,	.....	9.06	.....	2.86	Middlings present; wheat hairs.
197	J. W. Goheen, Birdsboro, Pa.,	.....	8.44	.....	3.86	Middlings present.
256	A. Good, Newbury, Pa.,	.....	10.38	.....	4.06	
67	The Great Western Cereal Co., Akron, O.,	7.94	9.50	4.13	4.20	
137	The Great Western Cereal Co., Akron, O.,	7.94	9.33	4.18	4.53	
69	The Great Western Cereal Co., Chicago, Ill.,	7.84	8.44	4.18	3.98	
91	The Great Western Cereal Co., Chicago, Ill.,	7.94	7.88	3.92	2.62	
242	Hopper Bros., Mahanoy City, Pa.,	.....	8.91	.....	3.31	Middlings present.
101	Kensington Milling Co., Kensington, Pa.,	.....	9.03	.....	3.46	
151	F. A. McKenzie, Quincy, Mich.,	.....	10.63	.....	3.79	
169	Smith Bros., Bradford, Pa.,	.....	10.63	.....	3.71	
125	Sproull Bros., Boyer, Pa.,	.....	10.75	.....	2.92	Middlings present.
153	Tucker & Squires, Springboro, Pa.,	.....	9.94	.....	3.59	
194	Henry S. Weinberger, Oley, Pa.,	.....	10.34	.....	3.70	Middlings present.

TABLE IX—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
	CORN, OATS AND BARLEY.			
21	American Cereal Co., Akron, O., .....	Corn, Oats and Barley, .....	Waynesboro, .....	J. M. Newcomer & Co.
199	American Cereal Co., Akron, O., .....	Corn, Oats and Barley, .....	Pottstown, .....	A. D. Aldburger.
64	American Cereal Co., Chicago, Ill., .....	Corn, Oats and Barley, .....	Harrisburg, .....	Hoffer & German.
129	American Cereal Co., Chicago, Ill., .....	Corn, Oats and Barley, .....	Butler, .....	W. A. Kamerer.
88	The Toledo Grain and Milling Co., Toledo, O., .....	Corn, Oats and Barley Chop, .....	Valencia, .....	Glasgow & Mahan.
162	The Toledo Grain and Milling Co., Toledo, O., .....	C. O. & B. Chop, .....	Union City, .....	Camp Milling Co.
	RYE AND OATS.			
76	T. M. Biddle, Altoona, Pa., .....	Standard Rye and Oats, .....	Altoona, .....	T. M. Biddle.
259	Buffalo Milling Co., Ltd., Lewisburg, Pa., .....	Rye and Oat Chop, .....	Williamsport, .....	L. E. Bates, Mgr.
257	Ring, Eaker & Co., Muncy, Pa., .....	Rye and Oat Chop, .....	Williamsport, .....	Gobel & King.

\*Jobber, not manufacturer.

TABLE IX—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)						Remarks.
		Protein.		Fat.		Found.		
		Guaranteed.	Found.	Guaranteed.	Found.			
CORN, OATS AND BARLEY.								
21	American Cereal Co., Akron, O.,	10.7	12.69	3.28	5.65			
199	American Cereal Co., Akron, O.,	13.	12.38	5.	5.50			
64	American Cereal Co., Chicago, Ill.,	.....	13.00	.....	5.18			
129	American Cereal Co., Chicago, Ill.,	13.	12.19	5.	4.74			
88	The Toledo Grain and Milling Co., Toledo, O.,	.....	9.19	.....	3.89			Corn especially abundant.
162	The Toledo Grain and Milling Co., Toledo, O.,	.....	10.28	.....	4.54			Considerable cob present.
RYE AND OATS.								
76	T. M. Biddle, Altoona, Pa.,	9.5	17.00	1.4	4.33			
259	Buffalo Milling Co., Ltd., Lewisburg, Pa.,	.....	11.44	.....	3.13			No rye halves, but wheat halves present.
257	Ring, Eaker & Co., Muncy, Pa.,	.....	11.56	.....	3.11			Considerable cob and weed seeds.

\*Jobber, not manufacturer.

TABLE X.—MIXED FEEDS MADE FROM MATERIALS NOT NAMED IN THE BRAND.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
<b>[L.] PROPRIETARY BRANDS.</b>				
(a) Non-Condimental.				
84	The American Cereal Co., Chicago, Ill.,	American Poultry Food,	Emsworth,	J. M. Little.
130	The American Cereal Co., Chicago, Ill.,	American Poultry Food,	Zellenople,	C. B. Cocher.
63	The American Cereal Co., Chicago, Ill.,	Quaker Dairy Feed,	Harrisburg,	Fickes & Sanderson.
3	The American Cereal Co., Chicago, Ill.,	Quaker Dairy Feed,	Lebanon,	A. M. Ketner & Sons.
106	The American Cereal Co., Akron, O.,	Schumacher's Stock Feed,	Mt. Union,	John Rummel.
6	The American Milling Co., Chicago, Ill.,	Sucrene Dairy Feed,	Cleona,	J. H. Long & Co.
5	The American Milling Co., Chicago, Ill.,	Sucrene Oil Meal,	Cleona,	J. H. Long & Co.
68	The American Milling Co., Chicago, Ill.,	Sucrene Oil Meal,	Hummelstown,	Jos. Burkholder.
95	Berger-Anderson Co., Milwaukee, Wis.,	Ha-Ha,	Rochester,	H. S. Speyer.
92	The Great Western Cereal Co., Chicago, Ill.,	Daisy Dairy Feed,	Bedford,	H. H. Lysinger.
143	The Great Western Cereal Co., Chicago, Ill.,	Daisy Dairy Feed,	Meadville,	C. F. Harris.
9	The Great Western Cereal Co., Chicago, Ill.,	Friends' Dairy Feed,	Lancaster,	John W. Eshelman.
36	The Great Western Cereal Co., Muscatine, Ia.,	Friends' Dairy Feed,	Ambler,	J. Watson Craft.
48	The Great Western Cereal Co., Minneapolis, Minn.,	Concentrated Dairy Feed,	Souderton,	Moyer & Bro.
61	The Great Western Cereal Co., Minneapolis, Minn.,	Concentrated Dairy Feed,	Middletown,	S. J. Baer.
30	The H. O. Company, Buffalo, N. Y.,	H. O. Dairy Feed,	Chester,	Wm. M. Powell.
202	The H. O. Company, Buffalo, N. Y.,	H. O. Dairy Feed,	Norristown,	Simpson Bros.
31	The H. O. Company, Buffalo, N. Y.,	H. O. Horse Feed,	Chester,	Wm. M. Powell.
149	The H. O. Company, Buffalo, N. Y.,	Poultry Feed,	Erie,	Wm. J. Carroll.

TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
[I] PROPRIETARY BRANDS.						
(a) Non-Condimental.						
84	The American Cereal Co., Chicago, Ill.,	.....	12.75	.....	5.77	Wheat, oats and corn.
130	The American Cereal Co., Chicago, Ill.,	14.0	13.31	4.5	5.92	Wheat, oats and corn.
63	The American Cereal Co., Chicago, Ill.,	13.0	13.94	3.25	3.75	Wheat middlings and oat feed.
3	The American Cereal Co., Chicago, Ill.,	13.0	13.63	3.25	3.86	Wheat middlings and oat feed.
106	The American Cereal Co., Akron, O.,	13.0	12.75	5.0	4.77	Corn and oats, wheat middlings.
6	The American Milling Co., Chicago, Ill.,	16.5	19.81	3.5	5.05	Linseed meal, corn and oat or barley hulls.
5	The American Milling Co., Chicago, Ill.,	25.0	27.13	3.5	3.92	Linseed meal, corn and oats or barley hulls, with a larger proportion of linseed.
68	The American Milling Co., Chicago, Ill.,	25.0	26.44	3.5	3.46	Linseed meal, corn and oats or barley hulls, with a larger proportion of linseed.
95	Berger-Anderson Co., Milwaukee, Wis.,	.....	19.63	.....	3.39	Wheat middlings.
92	The Great Western Cereal Co., Chicago, Ill.,	12.25	10.06	3.20	2.75	Oat feed.
143	The Great Western Cereal Co., Chicago, Ill.,	13.25	10.44	3.30	2.17	Oat feed.
9	The Great Western Cereal Co., Chicago, Ill.,	8.	8.75	3.	2.96	Oat feed.
36	The Great Western Cereal Co., Muscatine, Ia.,	10.7	7.88	3.7	2.81	Oat feed.
48	The Great Western Cereal Co., Minneapolis, Minn.,	.....	7.75	.....	2.76	Oat feed.
61	The Great Western Cereal Co., Minneapolis, Minn.,	.....	8.00	.....	2.85	Oat feed.
30	The H. O. Company, Buffalo, N. Y.,	18.0	18.81	4.5	3.37	Wheat feed, corn, oats and cotton-seed meal.
202	The H. O. Company, Buffalo, N. Y.,	18.0	17.63	4.5	3.99	Wheat feed, corn, oats and cotton-seed meal.
31	The H. O. Company, Buffalo, N. Y.,	12.0	12.69	4.5	4.88	Wheat feed, corn and oats.
149	The H. O. Company, Buffalo, N. Y.,	17.0	17.63	5.5	5.25	Wheat feed, oats and corn, probably with a little cotton-seed meal.

TABLE X—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
204	Mixer-Hiller Milling Co., Wilkes-Barre, Pa., .....	Star Chop, .....	Norristown, .....	C. S. Neimans.
173	Toledo Grain and Milling Co., Toledo, O., .....	Keystone Chop, .....	Bradford, .....	Swanson Grocery Co.
175	Victor Mills, Springville, N. Y., .....	Golden Chop, .....	Ridgway, .....	Smith Bros. Co., Ltd.
(b) Condimental.				
104	Acme Food Co., Chicago, Ill., .....	Acme Stock Food, .....	Beaver Falls, .....	J. G. Allen.
148	J. W. Barwell, Waukegan, Ill., .....	Blatchford's Calf Meal, .....	Erie, .....	Geo. L. Siegel.
16	Dr. Hess & Clark, Ashland, O., .....	Dr. Hess' Poultry Panacea, .....	Chambersburg, .....	H. S. Gilbert.
17	International Food Co., Minneapolis, Minn., .....	International Cattle Fattener, .....	Waynesboro, .....	J. H. Gehr & Co.
18	International Food Co., Minneapolis, Minn., .....	International Stock Food, .....	Waynesboro, .....	J. H. Gehr & Co.
152	Geo. H. Lee & Co., Omaha, Neb., .....	Lee's Eggs Maker, .....	Springboro, .....	Tucker & Squires.
155	Manitoba Mills Co., Cleveland, O., .....	Manitoba Magic Feed, .....	Clarksville, .....	J. M. McConnell.
10	Myers, Niagara Falls, N. Y., .....	Myer's Poultry Spice, .....	Lancaster, .....	A. Frank Kendig Estate.
11	Myers' Niagara Falls, N. Y., .....	Myer's Royal Horse and Cattle Spice, ..	Lancaster, .....	A. Frank Kendig Estate.
[III.] BRANDS NOT PROPRIETARY.				
193	J. G. Allen, Beaver Falls, Pa., .....	Chop, .....	Beaver Falls.	
247	Blank & Gottshall, Sunbury, Pa., .....	Mixed Chop, .....	Sunbury, .....	Blank & Gottshall.
196	F. M. Brown, Birdsboro, Pa., .....	Mixed Chop, .....	Birdsboro, .....	H. H. Koch.
187	Isaac B. Brubaker, Rein, Pa., .....	Mixed Chop, .....	Reading, .....	Fryermouth & Bro.
181	D. Bucks & Co., Flemings, Pa., .....	Mixed Chop, .....	Unionville, .....	D. Bucks & Co.
185	Buffalo Milling Co., Ltd., Lewisburg, Pa., .....	Mixed Chop, .....	Lewisburg, .....	Buffalo Milling Co.
253	Buffalo Milling Co., Ltd., Lewisburg, Pa., .....	Mixed Chop, .....	Williamsport, .....	L. E. Bates, Mgr.
219	Bushkill Milling Co., Walters, Pa., .....	Mixed Feed, .....	Walters, .....	Bushkill Milling Co.

TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.	
		Protein.		Fat.			
		Guaranteed.	Found.	Guaranteed.	Found.		
264	Miner-Hiller Milling Co., Wilkes-Barre, Pa., .....	9.79	10.31	6.70	3.24	Corn, wheat meals, oat feed.	
173	Toledo Grain and Milling Co., Toledo, O., .....	.....	10.13	.....	5.25	Corn, oat feed and probably wheat.	
175	Victor Mills, Springville, N. Y., .....	9.17	8.56	5.84	4.50	Corn, oat feed and possibly a little barley.	
(b) Condimental.							
104	Acme Food Co., Chicago, Ill., .....	.....	21.19	.....	6.78	For detailed notes see p. 51.	
148	J. W. Barwell, Waukegan, Ill., .....	26.0	22.88	5.0	4.96		
16	Dr. Hess & Clark, Ashland, O., .....	.....	12.13	.....	1.59		
17	International Food Co., Minneapolis, Minn., .....	.....	13.56	.....	4.75		
18	International Food Co., Minneapolis, Minn., .....	.....	14.25	.....	4.76		
152	Geo. H. Lee & Co., Omaha, Neb., .....	.....	35.50	.....	3.32	Corn, oats and weed seeds, Corn, oats and wheat. Oat hulls, corn and probably rye. Corn, oats and probably rye. Corn, oat feed and wheat feed. Corn, oat feed and wheat feed. Corn, oats and wheat; cob and weeds. Corn, oats and wheat.	
155	Manitoba Mills Co., Cleveland, O., .....	.....	9.63	.....	3.02		
16	Myers, Niagara Falls, N. Y., .....	.....	14.88	.....	5.54		
11	Myers, Niagara Falls, N. Y., .....	.....	14.00	.....	4.99		
[III.] BRANDS NOT PROPRIETARY.							
103	J. G. Allen, Beaver Falls, Pa., .....	.....	10.25	.....	3.46		
247	Blank & Gottshall, Sunbury, Pa., .....	.....	9.44	.....	5.29		
196	F. M. Brown, Birdsboro, Pa., .....	.....	8.00	.....	3.55		
187	Isaac B. Brubaker, Rein, Pa., .....	.....	9.94	.....	2.84		
181	D. Bucks & Co., Flemings, Pa., .....	.....	7.88	.....	3.41		
185	Buffalo Milling Co., Ltd., Lewisburg, Pa., .....	.....	9.88	.....	3.73		
258	Buffalo Milling Co., Ltd., Lewisburg, Pa., .....	.....	9.69	.....	3.82		
219	Bushkill Milling Co., Walters, Pa., .....	.....	10.00	.....	5.55		



TABLE X—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection	Name of Dealer.
235	Catasauqua Mills, Catasauqua, Pa., .....	No. 2 Mixed Chop, .....	Catasauqua, .....	Catasauqua Mills.
110	B. Cohn, Altoona, Pa., .....	Dairy Feed, .....	Altoona, .....	B. Cohn.
109	B. Cohn, Altoona, Pa., .....	Horse Chop, .....	Altoona, .....	B. Cohn.
87	J. H. Cohn & Co., Akron, O., .....	No. 1 Chop, .....	Mars, .....	Duncan & Dunlap.
179	F. M. Cardon, Clearfield, Pa., .....	Mixed Chop, .....	Clearfield, .....	F. M. Cardon.
159	N. Seymour Crouch, Erie, Pa., .....	Chop Feed, .....	Erie, .....	N. Seymour Crouch.
147	Crouch Bros. Co., Erie, Pa., .....	Mixed Feed, .....	Erie, .....	Crouch Bros. Co.
178	Crouch Bros. Co., Erie, Pa., .....	Mixed Feed, .....	Du Bois, .....	W. H. Yoder.
208	Jos. M. Cranston, Cynwyd, Pa., .....	Combination hay and grain feed, .....	Cynwyd, .....	Jos. M. Cranston.
141	Wm. Densmore & Co., Erie, Pa., .....	Chop, .....	Erie, .....	Wm. Densmore.
231	East Penn Milling Co., Ltd., Allentown, Pa., .....	Mixed Chop, No. 1, .....	Allentown, .....	East Penn Milling Co., Ltd.
230	East Penn Milling Co., Ltd., Allentown, Pa., .....	Mixed Chop, No. 2, .....	Allentown, .....	East Penn Milling Co., Ltd.
166	Enterprise Milling Co., Oil City, Pa., .....	Chop, .....	Titusville, .....	O. W. Jones.
167	John Ewing Estate, Orbisonia, Pa., .....	Fresh Ground Chop, .....	Orbisonia, .....	John Ewing Estate.
172	L. A. Fischer & Co., Bradford, Pa., .....	No. 2 Chop, .....	Bradford, .....	L. A. Fischer & Co.
227	Fisher & Rohrbach, Tipton, Pa., .....	Mixed Chop, .....	Albertus, .....	Benjamin Oswald.
260	Fleming & Shellenburger, Hepburnville, Pa., .....	Mixed Chop, .....	Newbury, .....	Mrs. E. Winner.
218	M. H. Frankenfield, Easton, Pa., .....	Mixed Chop, .....	Easton, .....	H. E. Hawk.
233	Franklin Milling Co., Middleburg, Pa., .....	Mixed Chop, .....	Middleburg, .....	Franklin Milling Co.
217	A. W. Gandt, Martin's Creek, Pa., .....	Mixed Chop, .....	Easton, .....	H. E. Hawk.
180	C. T. Gerbrick & Son, Bellefonte, Pa., .....	No. 2 Chop, .....	Bellefonte, .....	C. T. Gerbrick.



TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
235	Catasauqua Mills, Catasauqua, Pa., .....	.....	11.06	.....	3.97	Oats and chop from wheat screenings; germs and wild buckwheat.
110	B. Cohn, Altoona, Pa., .....	7.	10.44	3.5	5.57	Corn, oats and rye.
109	B. Cohn, Altoona, Pa., .....	8.	15.50	4.	4.66	Rye and oats.
87	J. H. Cohn & Co., Akron, O., .....	.....	11.25	.....	2.67	Oat feed and wheat bran.
179	F. M. Cardon, Clearfield, Pa., .....	.....	11.25	.....	5.30	Corn and wheat feed.
159	N. Seymour Crouch, Erie, Pa., .....	.....	10.00	.....	4.20	Corn, oats and wheat.
147	Crouch Bros. Co., Erie, Pa., .....	10.2	9.69	4.5	3.38	Corn and oat feed.
178	Crouch Bros. Co., Erie, Pa., .....	12.0	9.06	5.0	3.87	Corn, oat hulls and wheat feeds.
208	Jos. M. Cranston, Cynwyd, Pa., .....	.....	9.56	.....	3.64	Corn, wheat feed, oat feed, timothy hay and straw.
144	Wm. Dinsmore & Co., Erie, Pa., .....	.....	9.63	.....	3.66	Corn and oat feed.
231	East Penn Milling Co., Ltd., Allentown, Pa., .....	.....	13.69	.....	3.15	Corn and wheat feed.
230	East Penn Milling Co., Ltd., Allentown, Pa., .....	.....	11.31	.....	3.72	Corn and probably rye feed.
166	Enterprise Milling Co., Oil City, Pa., .....	.....	9.13	.....	3.37	Corn, oats with possibly a little barley.
107	John Ewing Estate, Orblsonia, Pa., .....	.....	8.25	.....	3.94	Corn, oat hulls and middlings.
172	L. A. Fischer & Co., Bradford, Pa., .....	.....	8.94	.....	4.09	Corn and oat feed.
237	Fisher & Rohrbach, Topton, Pa., .....	.....	12.38	.....	4.74	Corn, oats and wheat feed.
260	Fleining & Shollenberger, Hepburnville, Pa., .....	.....	13.81	.....	3.82	Corn and wheat feed.
218	M. H. Frankenfield, Easton, Pa., .....	.....	10.25	.....	3.74	Corn, oats and probably rye.
253	Franklin Milling Co., Middleburg, Pa., .....	.....	9.75	.....	3.75	Corn, oats and probably rye.
217	A. W. Gandt, Martin's Creek, Pa., .....	.....	9.00	.....	3.16	Corn, oats and probably rye.
180	C. T. Gerbrick & Son, Bellefonte, Pa., .....	.....	12.06	.....	3.41	Corn, oats and rye.

TABLE X—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
184	F. A. Halderman, Lemont, Pa., .....	Mixed Chop, .....	Centre Furnace, .....	F. A. Halderman.
118	The Isaac Harter Co., Toledo, O., .....	Mixed Feed, .....	New Castle, .....	J. Johnston Fisher.
117	The Isaac Harter Co., Toledo, O., .....	No. 1 Chop, .....	New Castle, .....	J. Johnston Fisher.
223	J. H. Hawk, Allentown, Pa., .....	Mixed Chop, .....	Allentown, .....	M. F. Miller & Son.
193	Jas. S. Heffner, Kutztown, Pa., .....	Chop, .....	Reading, .....	G. W. Pennock.
246	S. F. Holshire, Shamokin, Pa., .....	Dairy Feed, .....	Shamokin, .....	S. F. Holshire.
98	R. D. Hunter & Co., New Brighton, Pa., .....	Fresh Ground Chop, .....	New Brighton, .....	John G. Borts.
131	W. W. Hunter, Chicago, Ill., .....	Winter Mixed Feed, .....	Zellenople, .....	C. B. Cocher.
139	Johnson & Co., Franklin, Pa., .....	No. 1 Chop, .....	Franklin, .....	Johnson & Co.
140	Johnson & Co., Franklin, Pa., .....	No. 2 Chop, .....	Franklin, .....	Johnson & Co.
93	Karcher Bros., Rochester, Pa., .....	Chop Feed, .....	Rochester, .....	Karcher Bros.
80	Klepser Bros., Martinsburg, Pa., .....	Corn Chop, .....	Altoona, .....	Klepser Bros.
227	Edwin S. Koch, Westcoastville, Pa., .....	Mixed Chop, .....	Allentown, .....	A. F. Stover Estate.
195	B. F. Kurtz, Joanna, Pa., .....	Mixed Chop, .....	Birdsboro, .....	I. B. Huyett.
228	M. M. Landenslager, Emaus, Pa., .....	Mixed Chop, .....	Allentown, .....	Geo. B. Shelly.
213	D. & A. Luckenbach, Bethlehem, Pa., .....	Horse Chop, .....	Bethlehem, .....	D. & A. Luckenbach.
214	D. & A. Luckenbach, Bethlehem, Pa., .....	Mixed chop, .....	Bethlehem, .....	D. & A. Luckenbach.
116	McClelland & Robinson, Edenburg, Pa., .....	Fresh Ground Chop, .....	New Castle, .....	J. S. Lindsey.
165	Mack Bros. & Kerr, East Titusville, Pa., .....	Chop, .....	Titusville, .....	Mack Bros. & Kerr.
232	Mann & Allshouse, Easton, Pa., .....	Mixed Chop, .....	Easton, .....	Mann & Allshouse.
154	Mathers Bros., Greenville, Pa., .....	Chop Feed, .....	Greenville, .....	Mathers Bros.
225	The Mauser Mill Co., Laury's, Pa., .....	Mixed Chop, .....	Allentown, .....	A. F. Stover Estate.

TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Guaranteed.	Found.	Guaranteed.	Found.	
184	F. A. Halderman, Lemont, Pa.,	.....	9.63	.....	3.41	Corn, oats and wheat feed.
118	The Isaac Harter Co., Toledo, O.,	.....	15.63	.....	4.59	Wheat feed.
117	The Isaac Harter Co., Toledo, O.,	.....	10.38	.....	4.49	Corn and oats.
223	J. H. Hawk, Allentown, Pa.,	.....	11.94	.....	3.12	Corn, wheat feed and a little oats.
193	Jas. S. Hefner, Kutztown, Pa.,	.....	11.69	.....	3.74	Corn, wheat middlings and oats.
246	S. F. Holshire, Shamokin, Pa.,	.....	8.81	.....	3.36	Corn, oats and barley.
98	R. D. Hunter & Co., New Brighton, Pa.,	.....	9.13	.....	2.47	Corn and oats.
131	*W. W. Hunter, Chicago, Ill.,	.....	10.50	.....	3.17	Wheat feed mixed with a woody adulterant.
133	Johnson & Co., Franklin, Pa.,	.....	8.06	.....	3.24	Corn, oats and possibly rye.
140	Johnson & Co., Franklin, Pa.,	.....	7.25	.....	2.52	Corn and oat feed.
93	Karcher Bros., Rochester, Pa.,	.....	13.44	.....	3.65	Corn, oats and wheat middlings.
89	Klepser Bros., Martinsburg, Pa.,	8.	9.94	3.	4.32	Corn, oats and wheat middlings.
227	Edwin S. Koch, Westcoesville, Pa.,	.....	8.88	.....	3.13	Corn, cob, oats and probably rye.
195	B. F. Kurtz, Joanna, Pa.,	.....	9.63	.....	3.70	Corn, oats and probably rye.
228	M. M. Laudenslager, Emaus, Pa.,	.....	9.19	.....	3.49	Corn, oats, wheat mids.
213	D. & A. Luckenbach, Bethlehem, Pa.,	.....	11.38	.....	5.24	Corn and probably rye.
214	D. & A. Luckenbach, Bethlehem, Pa.,	.....	11.63	.....	4.51	Corn, wheat, oat feed and weed seeds.
116	McClelland & Robinson, Edinburg, Pa.,	.....	10.44	.....	3.22	Corn, wheat and a little oats.
165	Mack Bros. & Kerr, East Titusville, Pa.,	.....	10.38	.....	3.18	Corn and oats; weed seeds abundant.
232	Mann & Allshouse, Easton, Pa.,	.....	11.25	.....	4.03	Wheat feed, corn and a little oats.
154	Mathers Bros., Greenville, Pa.,	.....	9.44	.....	3.33	Corn, oat hulls and wheat mids.
225	The Mauser Mill Co., Laury's, Pa.,	.....	11.94	.....	3.12	Chiefly corn and wheat.

\*Jobber, not manufacturer.

TABLE X—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection	Name of Dealer.
123	Mercer Milling and Lumber Co., Ltd., Mercer, Pa., .....	No. 2 Chop, .....	Mercer, .....	Mercer Milling and Lum- ber Co., Ltd.
156	J. H. Miller Co., Sharpsville, Pa., .....	Mixed Chop, .....	Sharpsville, .....	J. H. Miller.
221	Milton Flory, Bangor, Pa., .....	Mixed Feed, .....	Bangor, .....	Milton Flory.
252	Monroe Milling Co., Selinsgrove, Pa., .....	Mixed Chop, .....	Selinsgrove, .....	Monroe Milling Co.
215	Geo. H. Moyer, Bethlehem, Pa., .....	Mixed Feed, .....	Bethlehem, .....	Geo. H. Moyer.
226	H. N. Ochleifer, Allentown, Pa., .....	Mixed Chop, .....	Allentown, .....	A. F. Stover Estate.
192	Robt. A. Peifer, Reading, Pa., .....	Mixed Chop, .....	Reading, .....	Robt. A. Peifer.
121	Raney & Co., Mahoningtown, Pa., .....	Chop, .....	Mahoningtown, .....	Raney & Co.
108	G. C. Rice, Reedsville, Pa., .....	Chop, .....	Reedsville, .....	G. C. Rice.
216	H. K. Ricgle, Durham, Pa., .....	Mixed Chop, .....	Easton, .....	H. E. Hawk.
236	Elwood Roemig, Westcoesville, Pa., .....	Mixed Chop, .....	Catasauqua, .....	S. M. Snyder.
250	J. H. Ross, Linden Hall, Pa., .....	Chop, .....	Milton, .....	J. H. Kreitzer.
112	The Royer & Coon Grain Co., Bowling Green, O., .....	Chop, .....	Johnstown, .....	Smith & Moses.
229	Saeger Milling Co., Allentown, Pa., .....	Mixed Chop, .....	East Allentown, .....	Saeger Milling Co.
238	Shaeffer, Wanner & Co., Fleetwood, Pa., .....	Mixed Chop, .....	Fleetwood, .....	Shaeffer, Wanner & Co.
190	Irwin Shanemar, Reading, Pa., .....	Mixed Chop, .....	Reading, .....	G. H. Landis' Sons.
157	The Sharon Milling Co., Ltd., Sharon, Pa., .....	Chop, .....	Sharon, .....	The Sharon Milling Co., Ltd.
119	Simison Bros., Volant, Pa., .....	Mixed Chop, .....	New Castle, .....	P. Wagner & Son.
224	O. J. Smoyer, East Texas, Pa., .....	Mixed Chop, .....	Allentown, .....	E. C. Smoyer.
188	G. N. Shangler, Hiesten Mill, Pa., .....	Mixed Chop, .....	Reading, .....	Fryermouth & Bros.
254	Taylor & Eaker, Muncy, Pa., .....	Mixed Chop, .....	Muncy, .....	Taylor & Eaker.
128	Toledo Grain & Milling Co., Toledo, O., .....	Fresh Ground Chop, .....	Butler, .....	W. S. McCrea & Co.

TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Found.	Guaranteed.	Found.	Guaranteed.	
123	Mercer Milling and Lumber Co., Ltd., Mercer, Pa., .....	.....	8.38	.....	3.07	Corn and oat feed.
156	J. H. Miller Co., Sharpsville, Pa., .....	.....	11.69	.....	3.96	Corn, wheat feed, oat feed.
221	Milton Flory, Bangor, Pa., .....	.....	10.63	.....	4.00	Wheat feed, corn, oat feed; possibly a little rye.
252	Monroe Milling Co., Selinsgrove, Pa., .....	.....	10.25	.....	3.40	Corn, wheat and oats..
215	Geo. H. Moyer, Bethlehem, Pa., .....	.....	13.00	.....	5.62	Corn and wheat feed, possibly a little rye.
226	H. N. Ochleifer, Allentown, Pa., .....	.....	11.19	.....	4.14	Corn, wheat and oats.
192	Robt. A. Piefer, Reading, Pa., .....	.....	11.69	.....	3.82	Corn, wheat and oats.
121	Raney & Co., Mahoningtown, Pa., .....	.....	9.56	.....	3.09	Corn, oat feed and a little mids.
108	G. C. Rice, Reedsville, Pa., .....	.....	10.75	.....	4.04	Corn, wheat and oat feeds.
216	H. K. Riegle, Durham, Pa., .....	.....	7.75	.....	2.93	Corn and cob, oat feed and possibly some rye.
236	Elwood Roemig, Westcoesville, Pa., .....	.....	12.69	.....	4.06	Wheat, corn and oats.
250	J. H. Rcass, Linden Hall, Pa., .....	.....	9.44	.....	3.55	Corn, with some cob, oat feed, wheat feed.
112	The Royer & Coon Grain Co., Bowling Green, O., .....	.....	7.94	.....	2.81	Corn and oat feed.
229	Saeger Milling Co., Allentown, Pa., .....	.....	12.56	.....	4.02	Wheat feed, corn and a little oats.
238	Shaeffer, Wanner & Co., Fleetwood, Pa., .....	.....	10.13	.....	3.72	Wheat, corn and oats.
190	Irvin Shanemar, Reading, Pa., .....	.....	11.25	.....	3.58	Corn, oats and probably a little barley.
157	The Sharon Milling Co., Ltd., Sharon, Pa., .....	.....	9.63	.....	4.00	Corn, oats and possibly a little barley.
119	Simison Bros., Volant, Pa., .....	.....	11.25	.....	3.50	Corn, oats, wheat feed.
224	O. J. Smoyer, East Texas, Pa., .....	.....	10.25	.....	4.16	Chiefly corn and wheat feed.
188	G. N. Spangler, Hiesten Mill, Pa., .....	.....	10.44	.....	3.53	Corn, oats and probably a little rye.
254	Taylor & Eaker, Muncy, Pa., .....	.....	7.56	.....	3.33	Corn, with cob, probably with rye feed.
128	Toledo Grain and Milling Co., Toledo, O., .....	13.0	11.75	5.0	5.23	Wheat mids, corn and oats.

TABLE X—Continued.

Sample number.	Manufacturer.	Brand Name.	Place of Selection.	Name of Dealer.
174	Toledo Grain and Milling Co., Toledo, O., .....	No. 1 Chop, .....	Ridgway, .....	John Larson & Co.
86	Toledo Grain and Milling Co., Toledo, O., .....	No. 1 Yellow Chop, .....	Mars, .....	Link & Marshall.
170	Victor Mill, Springeville, N. Y., .....	No. 2 Chop, .....	Bradford, .....	O. F. Spencer.
183	C. Y. Wagner, Bellefonte, Pa., .....	No. 1 Chop, .....	Bellefonte, .....	C. Y. Wagner.
182	C. Y. Wagner, Bellefonte, Pa., .....	No. 2 Chop, .....	Bellefonte, .....	C. Y. Wagner.
239	George Walters, Hamburg, Pa., .....	Mixed Chop, .....	Hamburg, .....	George Walters.
115	Wampum Mill Co., Wampum, Pa., .....	Mixed Chop, .....	Wampum, .....	Wampum Mill Co.
191	George Wamsher, Lorain, O., .....	Mixed Chop, .....	Reading, .....	Koch, Busch & Co.
168	Warren Mills Co., Warren, Pa., .....	No. 2 Chop, .....	Warren, .....	Warren Mills Co.
189	Geo. W. Wertz, Wernersville, Pa., .....	Mixed Chop, .....	Reading, .....	Geo. W. Wertz.
222	Allen B. Wirt, Cetrionia, Pa., .....	Mixed Chop, .....	Allentown, .....	John E. Shurn.
234	Frank C. Williams, Easton, Pa., .....	No. 1 Mixed Chop, .....	Easton, .....	Frank C. Williams.
233	Frank C. Williams, Easton, Pa., .....	No. 2 Mixed Chop, .....	Easton, .....	Frank C. Williams.

TABLE XI—ANIMAL MEALS.

122	The Bowker Co., New York and Boston, .....	Bowker Animal Meal, .....	New Castle, .....	Marshall Bros.
-----	--	---------------------------	-------------------	----------------

TABLE X—Continued.

Sample number.	Manufacturer.	Composition (Per cent.)				Remarks.
		Protein.		Fat.		
		Found.	Guaranteed.	Found.	Guaranteed.	
174	Toledo Grain and Milling Co., Toledo, O.,	.....	8.38	.....	3.89	Corn, wheat and oats feed.
86	Toledo Grain and Milling Co., Toledo, O.,	.....	8.13	.....	3.56	Corn and oat feed.
170	Victor Mills, Springville, N. Y.,	.....	9.06	.....	5.29	Corn and oat feed.
183	C. Y. Wagner, Bellefonte, Pa.,	.....	11.13	.....	4.26	Corn, oats and probably rye.
182	C. Y. Wagner, Bellefonte, Pa.,	.....	10.94	.....	4.05	Corn, oats and probably rye.
239	George Walters, Hamburg, Pa.,	.....	9.69	.....	4.60	Rye and oat feed.
115	Wampum Mill Co., Wampum, Pa.,	.....	8.19	.....	3.27	Chiefly corn and oat feed.
191	George Wansher, Lorain, O.,	.....	9.63	.....	3.43	Corn, oat feed and probably rye.
168	Warren Mills Co., Warren, Pa.,	.....	9.38	.....	3.13	Corn, oat feed and rye.
189	Geo. W. Wertz, Wernersville, Pa.,	.....	11.88	.....	2.54	Corn, oats and probably rye.
222	Allen B. Wirt, Cetrionla, Pa.,	.....	8.75	.....	3.88	Chiefly corn, wheat and oat feed.
234	Frank C. Williams, Easton, Pa.,	.....	11.63	.....	5.44	Corn, wheat and a little oats.
233	Frank C. Williams, Easton, Pa.,	.....	9.94	.....	5.14	Corn and a little oats.

TABLE XI—Continued.

122	The Bowker Co., New York and Boston, .....	30.	33.94	5.	10.08	Chiefly meat scrap.
-----	--	-----	-------	----	-------	---------------------



## COTTON-SEED MEALS AND FEEDS.

In the case of the meals, guarantees were given in all but three instances. Those for protein were identical in all cases; those for fat nearly so. The range of protein was 40 to 46.88 per cent., average 44.15 per cent; the range of fat was from 7.44 to 13.02 per cent., average 9.45 per cent. As a rule, the meals high in protein are low in fat, and vice versa. The variation was greater than that observed last year; low fat percentages are especially noticeable. Samples 1 and 2, Chapin & Co., St. Louis, which were taken at the same place by different persons at dates two months apart, show how wide a variation may occur in the goods of a single firm. As a whole, these results indicate the need for a closer control of their goods on the part of the manufacturers.

The cotton-seed feeds exceed their protein guaranty in both cases, and are deficient in fat. These feeds are mixtures of the meal and the lintel-covered hull; owing to the difference in the physical characters of these two ingredients, it is difficult to secure and maintain a perfect mixture.

No. 35 is far superior to No. 45 in feeding value.

## LINSEED MEALS.

Of the twenty-nine feeds of this character, thirteen, or nearly one-half, were sold without the required guaranty. In a number of cases, the guaranty was expressed with lower and upper limits, as: Protein, 38 to 40; fat, 1 to 3. In all such cases, the guaranty is in reality for the lower figure only, and these lower percentages have been stated in the tabulation.

These products fall naturally into two principal classes, according to their method of manufacture, the flax meals and the linseed meals; the former are marked by bright brown hulls and yellow meats, the latter by dull brown hulls and grayish meats, the appearance having been changed by heat, which the linseed meals have experienced.

Flax meal, or flax-seed meal is, properly speaking, nothing but the coarse-ground flax seed from which none of the constituents has been removed; such a meal is No. 54, manufactured by McIlvaine Bros., Philadelphia; it has a very high fat content, 28.13 per cent., and a correspondingly low protein, 22.44 per cent. Three other flaxseed meals, Nos. 201, 13 and 24, sold under the name of "Cleveland Flax Meal," though purporting to be made by different firms,



exhibit a very different composition; in them, the fat has been reduced 1.3 to 2 per cent., the protein rising correspondingly to 37 to 39 per cent. These last mentioned meals look like the untreated flax meal, the process of oil extraction not being conducted under conditions producing the color changes manifest in linseed meals. It would seem that some qualifying term should be added to the commercial name of these extracted flax meals to distinguish them from the normal meal; these lots were, however, all marked with a high protein guaranty, so that notice of the nature of the material was thus given to all well-posted buyers.

The linseed meals are always deprived of most of their oil; this is accomplished in the "old process" meals by high pressure upon the heated meal, in the "new process" meals by use of a volatile solvent, such as gasoline, which may then be easily and completely removed from both the meal and the extracted oil by aid of gentle heat. Pressure is less effective than extraction, so that the "old process" meals are richer in fat, and lower in protein, while the "new process" meals are very low in fat and proportionately richer in protein. Of the twenty-five samples sold as oil meal, cake meal or linseed meal, only one, No. 7, made by the American Linseed Co., of Chicago, is indicated by its composition to be a "new process" meal, as its guaranty, though not its brand name clearly shows. The "old process" meals show the following range in composition: Protein, 28.06 to 37.81 per cent; fat, 5.26 to 9.77 per cent; average protein, 33.43 per cent; fat, 7.73 per cent. This average is higher for fat than the average of analyses of Pennsylvania samples drawn in 1900, and proportionately lower in protein.

The guaranties given for flaxseed meals and new process linseed meal were met in every instance; but in the case of "old process" meals, with eleven guaranties, there were six distinct instances of deficiency in protein, the deficiencies ranging from a little less than one to very nearly four per cent.; the fat was deficient in but two cases. In fairness to the trade attention should be called, on the other hand, to the fact that there were three samples in which the protein exceeded the guaranty by 2 to 4 per cent., and that in seven cases the fat over-ran the guaranty, the excess ranging in six cases from 1 to nearly 5 per cent. None of the samples exhibited the presence of an adulterant, though several, No. 113 especially, were unusually low in protein.

#### WHEAT PRODUCTS.

Crushed wheat and unmixed bran or middlings are not required by the statutes of Pennsylvania to be sold under guaranty. The bran and wheat feeds analyzed were all of good quality; the guaranty for

the wheat feed, No. 85, made by the American Cereal Co., of Chicago, was, however, not fully met.

The middlings exhibit a very different condition; excluding Nos. 212 and 262, they range from 14.31 to 21.9 per cent. of protein and 4.03 to 6.08 per cent. of fat. No. 134 is, properly speaking, a white middlings to which dust-room products, rich in wheat hairs, have been added. Red Dog flour is flour made from that part of the grain lying just below the bran coat; the sample No. 100 falls well within the allowable limits of variation in composition. No. 262, Gee's "Extra Fancy Sharps," is material of distinctly inferior value; it contains little either of the germs or of the oily, outer layer of the wheat endosperm, or kernel proper—as the guaranteed fat percentage shows. The chief objection to the material lies in the number of weed seeds contained; while it is true that in this material all the seeds appear to have been broken, there is always danger that they may occasionally escape disintegration to such extent as to retain the power of germination.

No. 212 is the only sample which shows adulteration. This sample is made up to more than half its weight of ground corn cob. The cob meal is so fine ground as to escape casual observation; any buyer who would take the precaution of testing the feed between his teeth, could readily detect the small, elastic, woody particles. Their identity is quickly shown upon microscopic examination; the small, thin, reddish palets of corn are also found in this feed, entering it as an accompaniment of the cob.

Gee's germ middlings, No. 261, require a word. They appear, under the microscope, to be almost wholly composed of weed seeds. Most of the weeds are some form of *Iolygonum*, the buckwheat genus, and are not known to be injurious as food; there are, however, a very considerable number of smaller seeds of different species that are unbroken. These would probably escape crushing between the animal's teeth and might appear in the manure, ready to sprout and multiply. To the farmer who is fighting with weeds, the use of such material as a feeding-stuff is a serious menace. This much should be said, however, for the material. Its composition comes up to guaranty, and its color, which is dark brown, should rouse instant attention on the part of every buyer who sees it before purchasing.

#### BARLEY PRODUCTS.

The malt sprouts show a rather wide range of composition, the amount of foreign material in sample 49, reducing its protein content. In only a single instance does the required guaranty appear.

The brewer's grains are of excellent quality, though samples Nos.

59 and 70 contain some raw grain, corn as well as barley in the latter instance. Out of six samples, only one was accompanied by the required guaranty.

#### OAT FEEDS.

The term "Oat Feed" is now used in the trade to designate not an oat chop, that is, a mixture of the hull and kernel in their normal proportion, but rather a mixture of the kernel with an excess of the hull. In three cases, the term "oat feed" has been stretched—in Nos. 290 and 244, to apply to plain oat hulls; in No. 186, to apply to a mixture of oat hulls, corn and middlings—chiefly oat hulls. Such use is misleading. Concerning the feeding value of the hulls, it may be stated that they are far inferior to oat straw; it is difficult to see why any one having access to good ordinary roughage, should turn to oat hulls as a food, or should consent to buy his oats in unknown quantity in feeds diluted with material of so inferior value. Guaranties appear in 3 out of 9 cases; but both samples of Royal Oat Feed fell considerably below guaranty in both protein and fat.

#### CORN PRODUCTS.

Regarding the simple milling products, several points are noteworthy: Samples No. 77 and 251 are not in accordance with their names; the high protein guaranteed for No. 77 might attract attention, but it is not higher than corn chop sometimes goes. No one would suspect the presence of cob and middlings from the name of the brand; nor would cob be expected in No. 251.

The protein in hominy feed No. 52 is too low; the required guaranties are lacking in every case.

Of the five samples of gluten meal, only one meets the accompanying guaranty. The deficiency of protein in No. 124 is doubtless due to the incomplete removal of starch from the kernel, or to its later admixture with the meal.

A correspondingly general tendency to fall below guaranty appears in the gluten feeds; Nos. 14, 28 and 97 are especially deficient. The guaranty requirement has been quite well heeded in case of these two classes, out of the entire group of corn products.

"Cerealine No. 2," judging from its fat content, has more of the germ than "cerealine."

Star corn bran is especially rich in fat.

Sugar feed is a coarse corn bran; maizeline resembles hominy feed, and falls considerably below guaranty; as does "germ oil meal," possibly because of considerable corn bran present in it.

## MIXED FEEDS FROM NAMED GRAINS.

Corn and oats.—Dent corn ranges from 7.5 to 12.8 per cent. of protein, average, 10.3 per cent., and from 3.1 to 7.5 per cent. of fat, average, 5.0 per cent; whole oats ranges from 8.0 to 14.4 per cent. of protein; average, 11.8 per cent.; and from 3.4 to 5.8 per cent. of fat; average, 5 per cent. From these data, a mixture of equal parts of corn and oats might have as little as 7.75 per cent. of protein and 3.25 per cent. of fat, or as much as 13.6 per cent. of protein and 6.65 per cent. of fat; but on the average, should have 11 per cent. of protein and 5 per cent. of fat. Yet not one of the samples examined that wholly composed of corn and oat products, attained to the average. In many instances, wheat feed or middlings appeared, without its higher protein percentage forcing the feed above the corn-and-oats average. Clearly a great many feeds sold as though they were simple mixtures of corn and oats, are diluted with oat hulls and sometimes balanced up with middlings to compensate for the dilution, but the misleading brand name affords the buyer no information upon the point. While a crude fiber determination would be needful to accurately determine the facts, it appears that very few of these feeds are the simple mixtures of ground whole grains that the law exempts from branding and announcement of guaranty.

Corn, oats and barley.—Barley ranges in composition as follows: Protein, 8.75 to 14.88 per cent., average, 11.33 per cent; fat, 2.06 to 3.54 per cent. average, 2.68 per cent. Referring to the variations in composition of corn and oats given in the preceding paragraph, it is readily seen that a mixture of equal parts of the three entire grains might, under very rare circumstances, have as little as 8.08 per cent. of protein and 2.85 per cent. of fat, or as much as 14.02 per cent. of protein and 5.61 per cent. of fat, but that the average composition of the mixture would be 11.64 per cent. of protein and 4.25 per cent. of fat.

The high percentage guaranteed for Nos. 64, 129 and 199, indicate the probable use of some by-product rich in protein and fat—such as gluten feed or brewers' grains in place of part of the whole grains; the starches of all three cereals were, however, found in these feeds, and a determination of fiber would be needful to ascertain whether these by-products had been largely substituted for the entire grains. In No. 88 corn was far more abundant than the other grains, and the oat hulls were possibly in excess; in No. 162, the presence of considerable cob was noted.

Rye and oats.—Rye varies from 8.75 to 15.58 per cent. of protein, average, 11.22 per cent., and 1.28 to 2.91 per cent. of fat, average, 1.94 per cent. A mixture of equal parts of rye and oats might vary therefore from 8.4 to 15 per cent. of protein and from 2.3 to 4.4 per cent.



of fat, while its average composition would be 11.57 per cent. of protein and 3.47 per cent. of fat.

With this basis of comparison it is readily seen that No. 76 must be in part composed of rye feed or middlings, instead of the entire grain. The remaining samples show the normal percentages, but the presence of wheat hairs indicate the substitution, at least in part, of wheat for rye in No. 259.

#### MIXED FEEDS—PROPRIETARY BRANDS.

##### (a) Non-Condimental.

The mixed feeds whose name gives no hint of composition, are the principal avenues through which cereal by-products of such character as to find little market by themselves, come to sale. Any material possessing some small feeding value may be used in the mixture without rendering the mixer open to the charge of adulteration or misrepresentation. It is, however, to a correspondingly increased degree, wise for the buyer to purchase with a keen eye to quality as well as to quantity, when such feeds are offered.

The microscopic examinations of these feeds do not in all cases suffice to show satisfactorily the specific nature of the ingredients. For example, in the case of mixtures containing oat products, it is readily determined whether both hull and kernel are present, but the differences in sub-division of these parts makes any close judgment as to their relative proportions very difficult. Again, while it is usually quite easy to distinguish between wheat and rye flours or feeds by the properties of their starch grains, when they are mixed with one another or with large quantities of other finely divided material, the eye can not seize so readily upon these differences in proportion which serve to mark the separate products. As already noted, the hairs from these two grains differ considerably in their dimensions, especially the longer hairs, and they have served to discover the specific nature of the ingredient used in some mixtures; in other cases, their number was so small, owing to the milling product used, that many hours of search were required to obtain enough measurements to form a basis of judgment. The conditions under which the microscopic work has been done, this season, have made it impossible to obtain the time required for such prolonged examination; the results stated, therefore, so far as distinctions between wheat and rye are concerned, are based chiefly upon the appearance of the starches and are to be considered as indicative of probabilities only.

Concerning the non-condimental proprietary feeds, it is clear that most of them are not made by chopping entire grains or mixtures thereof. Guaranties are given in most cases; the instances of serious deficiency in protein are few, those in fat more numerous.

## (b) Condimental Foods.

Into this group have been thrown all foods to which salt, spices or other flavoring substances or foreign colors have been added.

No. 104, Acme Stock Food.—Linseed meal and corn, flavored with 4.95 per cent. of common salt and colored with charcoal.

No. 148, Blatchford's Calf Meal.—It has been claimed by the manufacturers of this feed, that it is chiefly composed of the carob bean with leguminous and oleaginous seeds, without addition of cheap mill feeds. In this sample were linseed meal, beans, a little wheat—probably middlings and fenugreek; while there is an odor similar to that of the carob bean, its sweet peculiar flavor is lacking, and some of its distinctive tissues, whether of seed or pod, were found; this is not proof of the entire absence of this material, but of the absence of any considerable quantity of it. Samples examined, some time since, by the Connecticut Station, contained considerable quantities of wheat feed and some cottonseed meal, but beans were not reported.

No. 16, Dr. Hess' Poultry Panacea: Wheat feed, mixed with carbonate of lime, salts and 9.41 per cent. of common salt; further flavored with asafoetida and highly colored with Venetian red.

No. 17, International Cattle Fattener.—Wheat feed, largely dust-room material, 14.36 per cent. of common salt, a pungent material—probably cayenne, the whole blackened with charcoal.

No. 18, International Stock Food.—Wheat feed, largely dust-room material, having a pungent taste, probably from cayenne, together with a bitter, like gentian; the whole blackened with charcoal.

No. 152, Lee's Egg Maker.—Chiefly linseed meal, with 17.49 per cent. of salt, a little pungent material, probably cayenne and charcoal to color.

No. 155, Manitoba Maize Feed.—Wheat feed, corn product, 23.93 per cent. of salt, and charcoal to color.

No. 10, Myers' Poultry Spice.—Corn, wheat feed, spent mustard, tumeric and fenugreek were found, with 11.88 per cent. of salt. Pungent flavor, due probably to cayenne.

No. 11, Myers' Royal Horse and Cattle Spice.—Similar in base to the foregoing; 12.87 per cent. of common salt. No pungent material present. Winton reports linseed meal and malt sprouts, which were not identified in our sample.

Concerning these it need only be noted that their nutritive value is, for the most part, very ordinary and that almost the only point upon which the purchaser can feel assured is that he is paying too much for what he is getting.

## MIXED FEEDS OF GENERAL NAMES—NOT PROPRIETARY.

The complex character of these feeds is very apparent, sixty-one of eighty-six samples containing at least three ingredients, not counting corn cob as such, when the kernel is also present.

In the eighty-six samples, oats was represented by its hull at least, seventy-six times. Concerning the nature of the oat product in these mixtures, the analytical data afford some valuable suggestions. In thirteen cases, the oats was associated with corn alone, in fifty-one other instances, with corn and either wheat, rye or barley products, omitting all foods in which corn cob also appeared. It is characteristic of all the feed by-products now derived from corn, wheat, rye and barley, that they are richer than the original grain in protein and also in fat, unless, in the case of corn, the by-product has been extracted for its oil, when the protein is correspondingly increased. In many cases, the corn present had the appearance of hominy feed, its original structure remaining, but the inner, white, starchy portion of the grain being absent; hominy feed is far richer in fat than the original grain. The fat and protein content of these feeds must therefore tell us whether whole oats, which is moderately rich in protein and fat, or oat hulls, which are poor in both, though always containing a little oat-dust and broken oat kernels, have been used. It is significant that of the thirteen samples of corn and oats, only three have as much protein as average corn, not to make the more severe comparison with genuine corn and oat chop or provender made from equal parts of the two entire grains; in a considerable proportion of the cases, the protein and fat are far below the normal for corn alone. Even when such highly nitrogenous materials as wheat or rye middlings are added, the showing is little improved; for out of fifty-one feeds in which corn and an oat product were mixed with some product from wheat rye or barley, only nineteen were as rich in protein and fat as corn, and thirty-two were poorer in one or both constituents than the last named grain. In other words, nearly all these feeds are not chops of entire grains mixed, but are mixtures in which oats are represented, in part at least, by the hulls left as a residue from oat meal manufacture. The same condition of affairs obtains in the few feeds made from one of the cereals, other than corn, and an oat product; two out of three have the oats represented largely by the hull.

On the other hand, it is fair to this class of feeds to note that corn cob appears in considerable quantity, in but few of them.

Guaranties for these feeds are conspicuous by their absence; seventy-seven of the eighty-six were made in Pennsylvania. Eight guaranties are reported, of which three only were met by the composition of the goods.

The results of this survey of Pennsylvania feed-stuffs may be briefly summed up as follows:

1. There is a considerable proportion of cotton-seed meal selling under the grade "prime," that is too dark to be admitted to this classification.

2. Flaxseed meal is being sold under the same name, whether the fat has been removed or not.

3. The term oat feed is applied both to oat hulls and to mixtures of the hull with chopped oats, but no "oat feed" examined has the proportion of kernel found in the entire grain.

4. A very large proportion of oat hulls appears in mixtures sold under the general names of "chop," "mixed feed," etc.; there is, in such case, no technical misrepresentation; nevertheless, in the absence of a statement of composition as required by law, the consumer is buying a very large volume of very inferior feed without due notice. This substitution of oat hulls for oats appears also in feeds sold under names indicating that the materials are made by mixing the entire grains.

5. Cob meal has been found as an adulterant of wheat feed.

6. Many of the feeds contain many weed seeds, sometimes in a whole condition; buyers should be watchful against such materials.

7. There is not only a very general failure to comply with the legal requirements as to guaranty—which will doubtless be remedied as the trade becomes better acquainted with these requirements and more fully aware of the advantage which such guaranty eventually gives to all honest dealers; but there is a too general failure to meet the guaranty given. This is doubtless to be explained in part by the lack of careful chemical control over the mixing operations; but the deficiencies occur in too large a proportion of the cases to admit this explanation for all the observed instances.



# INDEX.

---

## A.

	Page.
Acme Food Company, Chicago, Ill., .....	38
Akron Cereal Company, Akron, O., .....	26
Allen, J. G., Beaver Falls, Pa., .....	38
American Cereal Company, Chicago, Ill., .....	20, 26, 32, 34, 36
American Cottonseed Oil Company, New York City, .....	14
American Linseed Company, Chicago, Ill., .....	16
Armstrong, McKelvey Company, Allegheny, Pa., .....	16

## B.

Bainger, M. F., Philadelphia, Pa., .....	30
Barwell, J. N., Waukegan, Ill., .....	38
Bart & Gottschall, Sunbury, Pa., .....	38
Bauch, J. D., Kinzers, Pa., .....	14
Berger-Anderson Company, Milwaukee, Wis., .....	36
Biddle, T. M., Altoona, Pa., .....	20, 28, 32, 34
Booker & Gentry, Memphis, Tenn., .....	14
Bogan & Bergamer, Herndon, Pa., .....	22
Bowker Company, New York City, .....	46
Branch, Levi, Harrisburg, Pa., .....	16
Braun, G. F., & Son, Buffalo, N. Y., .....	32
Brodc, F. W., & Co., .....	14
Brown, F. M., Birdsboro, Pa., .....	38
Brubaker, I. B., Rein, Pa., .....	38
Bucks, D., & Co., Flemings, Pa., .....	38
Buckly, J. M., & Co., Philadelphia, .....	24
Buffalo Milling Company, Lewisburg, .....	34, 38
Bushkill Milling Company, Waltars, .....	38

## C.

Cardon, F. M., Clearfield, Pa., .....	40
Carroll, W. I., Pittsburg, Pa., .....	14
Catasauqua Milling Company, Catasauqua, Pa., .....	40
Cerealine Manufacturing Company, Indianapolis, Ind., .....	30
Chapin & Co., St. Louis, Mo., .....	14, 16, 24, 26, 28
Christian, L., & Co., Minncapolis, Minn., .....	20
Cleveland Linseed and Oil Company, .....	16
Cohn, B., Altoona, Pa., .....	40
Cohn, J. H., & Co., Akron, O., .....	40

	Page.
Corono Milling Company, Greentown, Ind., .....	28
Cranston, Jas. M., Cynwyd, Pa., .....	40
Crouch, N. Seymour, Erie, Pa., .....	40
Crouch & Bros., Erie, Pa., .....	40

## D.

Densmore, Wm., & Co., Erie, Pa., .....	40
Delp, R. B., Allentown, Pa., .....	20
Dewitt, B., Philadelphia, .....	24
Diamond Mills, Buffalo, N. Y., .....	32
Duncannon Flouring Mill, Duncannon, Pa., .....	20

## E.

East Penn Milling Company, Allentown, Pa., .....	40
Ellsworth & Co., Buffalo, N. Y., .....	32
Emlenton Milling Company, Emlenton, Pa., .....	32
Enterprise Milling Company, Oil City, Pa., .....	32, 40
Ewing Estate, Orbisonia, Pa., .....	40

## F.

Fish, F. K., & Sons, New York City, .....	26
Fisher & Rohrbach, Topton, Pa., .....	40
Fleming & Shellenberger, Hepburnville, .....	40
Flory, Milton, Bangor, Pa., .....	22, 44
Flynn, Thomas, Emlenton, Pa., .....	16
Franklin Milling Company, Middleburg, Pa., .....	40
Frankenfield, M. H., Easton, Pa., .....	40

## G.

Gandt, A. W., Martins Creek, Pa., .....	40
Gee, G. E., Grain Company, Minneapolis, Minn., .....	20
Gerbrick, C. T., & Son, Bellefonte, Pa., .....	40
Glucose Sugar Refining Company, Chicago, Ill., .....	28, 30
Glucose Refining Company, Pekin, Ill., .....	28
Goff, M. B., Dubois, Pa., .....	32
Goheen, J. W., Birdsboro, Pa., .....	32
Great Western Cereal Company, Chicago, Ill., .....	26, 32, 36
Gregory Jennison Company, Minneapolis, Minn., .....	20

## H.

Halderman, L. A., Lemont, Pa., .....	42
Hannestein & Co., Buffalo, N. Y., .....	16
Harmony Cereal Company, .....	28
Harter, Isaac, & Co., Toledo, O., .....	42
Hawk, J. H., Allentown, Pa., .....	42
Heebner, W. K., West Point, Pa., .....	30
Heffner, Jos. S., Kutztown, Pa., .....	42
Herr & Clark, Ashland, O., .....	40
H. O. Company, Buffalo, N. Y., .....	36
Holshire, S. F., Shamokin, Pa., .....	42

	Page.
Hopper Bros., Mahanoy City, Pa., .....	32
Hudnut Company, Terre Haute, Ind., .....	30
Hunter Bros., St. Louis, Mo., .....	14
Hunter, R. D., New Brighton, Pa., .....	42
Hunter, W. W., Chicago, Ill., .....	42

## I.

Illinois Sugar Refining Company, Chicago, Ill., .....	30
International Food Company, Minneapolis, Minn., .....	40

## J.

Jenkins, T. C., Pittsburg, Pa., .....	16
Johnson & Co., Franklin, Pa., .....	42

## K.

Kamm, P. C., Milwaukee, Wis., .....	24
Karcher Bros., Rochester, Pa., .....	42
Kensington Milling Company, Kensington, Pa., .....	32
Klander Estate, Philadelphia, .....	24, 28
Klepser Bros., Martinsburg, Pa., .....	42
Koch, E. S., Wescoesville, Pa., .....	42
Kreider, Jos. H., & Son, Annville, Pa., .....	26
Kurtz, B. & F., Joanna, Pa., .....	42

## L.

Laudenslager, M. M., Emeas, Pa., .....	42
Lee, Geo. H., & Co., Omaha, Neb., .....	40
Lewis, John G., Bros. & Co., Philadelphia, .....	16
Longacre & Co., Schwenksville, Pa., .....	16
Luckenbach, D. & A., Bethlehem, Pa., .....	42

## M.

Mack Bros. & Kerr, Titusville, Pa., .....	42
Manitoba Mills, Cleveland, O., .....	38
Bann Bros., Buffalo, N. Y., .....	16
Mann & Allshouse, Easton, Pa., .....	42
Mansfield Linseed Oil Company, Mansfield, O., .....	16, 18
Mathers Bros., Greenville, Pa., .....	42
Mauser Mill Company, Treichlens, Pa., .....	22
McClelland & Robinson, Edenburg, Pa., .....	42
McCullough, Chas. J., Cincinnati, O., .....	16
McKenzie, F. A., Quincy, Mich., .....	32
McIlvaine Bros., Philadelphia, Pa., .....	16
Mellor, J. H., Company, Sharpsville, Pa., .....	44
Mercer Milling Company, Mercer, Pa., .....	44
Metzger Seed and Oil Company, .....	18
Meures, Alfred, Milwaukee, Wis., .....	24
Midland Linseed Oil Company, Minneapolis, Minn., .....	18
Miner-Hiller Milling Company, Wilkes-Barre, Pa., .....	38

	Page.
Monroe Milling Company, Selinsgrove, Pa., .....	44
Moyer, Geo. H., Bushkill, Pa., .....	44
Mueller, E. P., Milwaukee, Wis., .....	24

## N.

National Milling Company, Toledo, O., .....	20
National Starch Company, Indianapolis, Ind., .....	28, 30
New York Glucose Company, New York City, .....	30

## O.

Ochleifer, H. N., Allentown, Pa., .....	44
---	----

## P.

Peifer, Robt. A., Reading Pa., .....	44
Penn Grain and Feed Company, Philadelphia, Pa., .....	24
Pope, Chas., Glucose Company, Chicago, Ill., .....	28
Potts, John D. S., Philadelphia, Pa., .....	18

## R.

Raney & Co., Mahoningtown, Pa., .....	44
Rankin, M. G., & Co., Milwaukee, Wis., .....	24
Reigle, H. K., Durham, Pa., .....	44
Rice, G. C., Reedsville, Pa., .....	44
Ring, Eaker & Co., Muncy, Pa., .....	34
Ross, J. H., London Hall, Pa., .....	28, 44

## S.

Saeger Milling Company, Allentown, Pa., .....	44
Shaeffer, Warné & Co., Allentown, Pa., .....	44
Sharon Milling Company, Sharon, Pa., .....	44
Simison Bros., Volant, Pa., .....	44
Smith Bros., Bradford, Pa., .....	32
Smoyer, A. J., East Texas, Pa., .....	44
Southern Cotton Oil Company, Charlotte, N. C., .....	14
Spencer, Kellog, Buffalo, N. Y., .....	16
Sproul Bros., Boyer, Pa., .....	32
Stone, J. S., Philadelphia, .....	30

## T.

Taylor & Eaker, Muncy, Pa., .....	44
Thompson & Co., Allegheny, Pa., .....	18
Toledo Grain and Milling Company, Toledo, O., .....	20, 34, 38, 44, 46
Tucker & Squires, Springboro, .....	32

## U.

United States Sugar Refining Company, Chicago, Ill., .....	39
--	----

## V.

Victor Grain and Milling Company, Springville, N. Y., .....	Page. 40
---	-------------

## W.

Wagner, C. Y., Bellefonte, Pa., .....	46
Waltar, Geo., Hamburg, Pa., .....	46
Wampum Mill Company, Wampum, Pa., .....	46
Wampsher, Geo., Warren, Pa., .....	46
Warren Mills, Warren, Pa., .....	46
Weinberger, Henry S., Oley, Pa., .....	32
Wertz, Geo. W., Wernersville, Pa., .....	46
Williams, Frank C., Easton, .....	46
Weit, Allen B., Cetronia, Pa., .....	46

## Y.

Yeager, John, & Co., Wilkes-Barre, Pa., .....	26
---	----



COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF AGRICULTURE.

BULLETIN NO. 107.

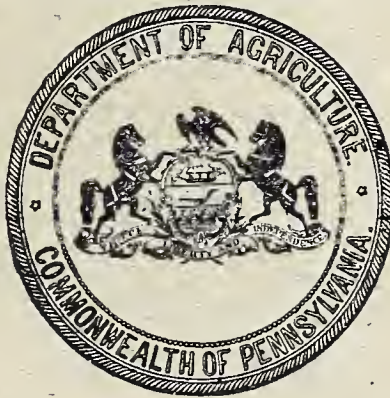
Analyses of  
**CONCENTRATED COMMERCIAL FEED STUFFS**

BY

Wm. Frear, Ph. D.

FROM

Samples Collected by the Department of Agriculture of  
Pennsylvania in 1902.



PUBLISHED BY DIRECTION OF THE SECRETARY.

1903.

---

WM. STANLEY RAY,  
STATE PRINTER OF PENNSYLVANIA.  
1903.

